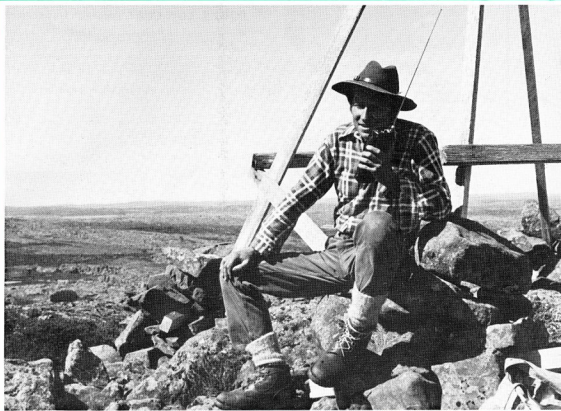


# amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



VOL. 47, No. 6

JUNE 1979

## ***FEATURED IN THIS ISSUE:***

- ★ RTTY IS FUN
- ★ DETERMINING ANTENNA SURFACE AREA
- ★ SCANNER FOR THE ICOM IC22S
- ★ ARE YOU INSURED?
- ★ JOHN MOYLE MEMORIAL NATIONAL FIELD DAY 1979 RESULTS

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# amateur radio

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## CONTENTS

### TECHNICAL

Commercial Kinks — FT101 and TS520 Modifications	26
Determining Antenna Surface Area	12
How to Learn French — The Hard Way	19
RTTY is Fun	8
Scanner for the Icom 22 S	15
Television Images from the Past	18
Try This — 2 metre Collinear	10
Two Metre Transmitter Filter for Oscar Mode J	11

### GENERAL

Arctic/Antarctic Amateur	16
Are You Insured	17
Basic Precepts of Science	20
Historic Film	34
ITU WARC Seminar — Sydney	29
John Moyle Memorial National Field Day — 1979 Results	40
Meet the VK2 Divisional Council	49
Mellish Reef DX-Pedition (Poem)	18
Mobile with a Coast to Coast Ground System	25
NOVICE NOTES	
CQDX Radio Group	27
Midland Zone Field Day	27
Around the Novice Shacks	28
S.E. Queensland Teletype Group	46
VK/ZL Oceania DX Contest — 1979	34
WARC 1979 — Why?	35

### DEPARTMENTS

Amateur Satellites	35
Around the Trade	36
Awards Column	39
Contests	50
Hamads	49
International News	47
Ionospheric Predictions	48
Letters to the Editor	47
Magazine Index	46
Obituary	50
QSP	4, 6, 12, 17, 49
Silent Keys	50
Technical Correspondence	47
VHF/UHF — An Expanding World	37
WIANEWS	5
WICEN	45
You and DX	40
20 Years Ago	49
ADVERTISERS' INDEX	50

## Cover Photo

The photograph shows Peter Schulz VK7PS, an active radio amateur and keen bushwalker combining both hobbies as he makes a contact via the Mt. Wellington repeater from the summit of Forty Lakes Peak in Tasmania's Great Western Tiers.

Photograph: WINSTON NICKOLS VK7EM

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VK9, 0 — Federal QSL Bureau, 23 Landale Street,

Box Hill, Vic. 3128.

## QSP —

# CONVENTION PRESS RELEASE

The following includes the text of a Press Report issued for the 1979 Federal Convention held in Melbourne 28th to 30th April:—

"The Minister for Post and Telecommunications, the Hon. A. A. Staley, last Sunday, April 29th, clarified several points of concern which affect amateur radio operators throughout Australia.

"Speaking at Brighton (Victoria) at the Annual Federal Convention of the Wireless Institute of Australia, Mr. Staley assured the delegates from all States that it was the Government's intention to restrict the installation of Channel 5A TV transmitters to those services for which broad financial commitments had already been made and confirmed the policy of

using UHF channels for ethnic television services.

"A number of other complex technical problems associated with the proximity of television transmission frequencies to internationally allocated amateur radio frequencies were also discussed and clarified. These problems relate particularly to Channel 0 and Channel 5A.

"During his address, Mr. Staley paid tribute to the Wireless Institute of Australia for the way in which the Institute had prepared the case for the amateur service for consideration at the World Administrative Radio Conference (WARC '79) to be held in Geneva from September this year.

"Mr. Staley said that the amateurs of Australia had been outstanding in qualifying their needs and requirements and he was surprised at the way in which the amateur delegates to WARC '79 had worked in collaboration with his Department in preparing Australia's submission to this most important Conference which will determine the pattern of world radio communications into the 21st century.

"Referring to continual experimenting by amateurs over the world, which has led to the development of many new communication techniques, Mr. Staley said 'We must have diversity in communication — we can no longer rely on traditional means; and the amateur service plays an important role in this regard'.

"The Wireless Institute of Australia, the official body of amateur radio operators, is the oldest amateur radio association in the world. Formed in 1910, it pre-dates the United Kingdom body by three years and the United States by five years.

"In the 68-year history of the Wireless Institute of Australia, this is the first time that a Federal Minister has addressed the Annual Convention."

In addition, the following subjects were discussed with the Minister:—

Pensioner licence fee concessions.  
Regulatory matters including the new Handbook and the proposed new Radio Communication Act.

Definition of television broadcast service areas and the possibility of a Radio Frequency Advisory Committee for Australia to increase awareness of Spectrum Management problems.

The form of discussion allowed direct questioning of both the Minister and his First Assistant Secretary, Mr. Wilkinson, who also attended.

It is not possible in this statement to present the wealth of information made available. However, details will be forthcoming through normal channels such as weekly broadcasts, Amateur Radio magazine and Divisional meetings.

The Council expressed its appreciation to the Minister for both his and Mr. Wilkinson's attendance at the Convention. ■

# WIANEWS

## 1979 CONVENTION

As this is being written the day following the close of the 1979 Federal Convention it will be possible to include some details of it.

The Minister for Post and Telecommunications, Mr. A. A. Staley, joined the Convention delegates as a guest for dinner on Sunday, 29th April, along with Mr. Jim Wilkinson, First Assistant Secretary, Radio Frequency Management Division of the Department.

During his speech, introduced in a witty and interesting preamble, the Minister made many references to the Channel 5A situation as may be seen in the Press Release published elsewhere in this issue. Much other information of interest to the amateur service came from his address and from the question and answer forum which followed.

When the Minister observed the reaction to the first mention of the Handbook it was clear to him that the Institute was dissatisfied with the draft presently under preparation for printing. He ordered it stopped, if this could be done at this late stage, to enable further representations to be made by the WIA. The virtues of self-regulation appeared to be shared by everyone present, particularly the guests.

Some other questions were answered, including the proposed new Radio Communications Act and the desire of the Institute to be granted some involvement before finalising this legislation, the possibility of a Radio Frequency Advisory Committee for Australia and the great awareness by the Minister and his Department of the continuing valuable contributions towards WARC 79 by the WIA representatives. Questions were asked about the schedule to the latest Amateur Station Licence Form RB94 (June 1978), which specifies the authorised receiving frequency bands — e.g. 7.00 to 7.15, but does not authorise the amateur operator to listen for USA stations on their authorised frequencies between 7.15 and 7.30: A discussion highlighted the impossibility of controlling receivers (general coverage and other) and the act of listening outside the amateur bands, whereas concentration should be given to persons using information obtained from listening (which accords with the spirit of ITU RR 5195(724)).

The long delays experienced in many places between passing an exam and the issue of a licence came in for criticism. "Over the counter" licensing in Victoria was instanced as an example of the measures which could be taken.

Two final questions before concluding this short report. Reduced licence fees for pensioners — promised in a letter of 19th

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October, 1976 — appears to have become nullified by re-investigation and an early reply is not now to be expected. A discussion about interference by, and to, Channel 5A TV, brought out recognition that the receiver is very largely the culprit, defined TV station broadcast service areas are proposed to overcome the problems of interference in "marginal" reception areas and that the "ethnic" television service will definitely go to UHF.

It was indeed most heartening to be made aware of the Minister's considerable knowledge about WARC 79 preparations and it was obvious to delegates that he had either been briefed in great detail or had been kept fully informed about them.

The Convention dealt with 34 Agenda Items, 10 general business items, 2 special resolutions, several routine items and 18 annual reports, in addition to detailed explanations relating to WARC 79. The work was facilitated by the appointment of 5 working groups. The Convention went into Committee for debate on other matters.

Perhaps of interest to members' pockets, the Finance Subcommittee presented a budget for 1980 which was adopted subject to review, as usual, by 31st August. In it no increases in Federal dues were proposed provided the rate of increase in new members is maintained. A study of the latest 1979 figures revealed the possibility of a small deficit in funds available for WARC 79 after a decision had been made that Mr. Michael Owen VK3KI be an additional amateur delegate for the Australian team. This step was considered essential based on latest advice and strong recommendations from experts in ITU General Conference proceedings. It was the unanimous agreement that no stone be left unturned to ensure the fullest possible involvement of the amateur radio service in this vital Conference. Note was also taken of the absolute necessity of continuing amateur involvement during the years succeeding the Conference.

The appointment of Executive members for the ensuing year resulted in only two changes — Mr. Courtney Scott VK3BNG comes on as Federal Treasurer, and Mr. Harold Hepburn VK3AFQ replaces Mr. Graeme Scott, who resigned through pressures of business, although he hopes to continue his work in the Federal sphere as Federal Education Co-ordinator to provide continuity.

The delegates were very pleased to welcome Mr. Jack Hum G5UM as a guest for a short time during the Convention. Most old-timers will know Jack's involvement with the RSGB over many many years and his expert knowledge in the VHF/UHF/microwave regions of the spectrum affecting ITU Region 1 and the UK in particular. Never were so many Divisional Presidents and past Presidents represented as at this Convention, including visits by Mr. Eric Bugbee VK3ZNN, the VK3 President: Six out of the seven Divisions were so represented. Others attending the Convention included Michael Owen VK3KI, Bruce Bathols VK3UV, Bob Arnold VK3ZBB (Satellites and Project Asch), Alf Chandler VK3LC (foreshadowing retirement as Intruder Watch Co-ordinator by the end of the year) and Ron Henderson VK1RH in his dual role of VK1 Federal Councillor and Federal WIGEN Co-ordinator. VK3SP kindly found time to attend and provide most valuable advice in the international sphere. Amongst other votes of thanks, mention must also be made of (a) the impending retirement from active participation in Institute affairs of Ray Jones VK3RJ, after 50 years service in the QSL field, and (b) Keith Roget VK3YQ/YJ8,

the former Federal Treasurer, for his work on the financial side of affairs.

Two new Annual Reports taken at this Convention were those from the Federal Videotape Co-ordinator, John Ingham VK5KG, and the Federal RTTY Co-ordinator's report done by Peter Mulligan, VK2ABH.

In this news report it is impractical to review all the Agenda Items but a few have been selected as being of probable general interest. Proposals to admit Australia-wide special groups (e.g. Old-Timers) for affiliation were referred back to the Executive for further review and report. An item dealing with proportional voting lapsed for want of a seconder. A position on 10 metre band beacons was adopted with a reminder to Novices to leave the beacon frequencies clear as far as possible (28.2-28.3 MHz segment). Channel numbering in the FM portion of the 2 metre band shall be in a 4 digit number based on frequency — repeaters identified by output channel number — VK4 were opposed to this and abstained on the similar system for 70 cm. A band plan for the FM portion of the 2m band (146-148 MHz) was adopted.

A working group spent much time debating the future of AR and the related subject of the Executive office. It was decided that a second full time employee should be employed primarily for AR duties. A motion that Federal Convention Minutes be made available to all affiliated clubs was withdrawn when the debate determined the fact that this was essentially a Divisional responsibility. A proposal for an international amateur licence/certificate along the lines of the international driver's licence was passed. Almost an annual motion seeking higher Morse speed examinations for reciprocal licensing problems was again passed.

Motions to request more frequent Morse and other exams were again passed, in addition to exams outside normal working hours. Work is to begin on seeking the issue without fees of the suffixes WIA to WIZ on a national basis for special purposes, and that WIGEN exercises should be authorised by the appropriate Statutory Authorities instead of the Department as in the past. A motion to press for By-law imports of transceivers and equipment for use on frequency bands above 2m was passed but importers of such equipment are to be encouraged as a first step to take the initiative themselves.

It was resolved that the most effective use for the \$3500 received for education purposes was the instigation of the production of a set of educational/promotional videotape masters. It was also decided that such monies should be put into an Education Resources Development Fund/Provision. The Executive were authorised to examine the desirability of printing an annual call book. Various modern production methods for the call book were studied in addition to a short debate about the contents.

Arising out of Annual Reports it was noted that the Federal Contest Manager proposes to seek, through the pages of AR, membership opinions on various contests and rules.

Under the heading of general business items several were withdrawn, some for one reason, some for another. Passed was one requiring Executive to establish criteria for Convention Agenda Items; there was also a reminder to submit them much earlier each year so that they can be printed in AR for members' comments beforehand.

A more detailed report will be prepared for the next issue of AR. ■

## QSP

### NOTHING NEW?

Aerials have always been a topic of great interest among the radio community. The "Electrical Experimenter" of June 1919 reported that Major Squier, US Signal Corps, had discovered that live trees could be used as aerials. Communications between trees was carried out over a distance of three miles. (The US Army again investigated this generally available and well camouflaged antenna during the Vietnam war.) The editor of "Electrical Experimenter" suggested that the Major had discovered the answer for the ambitious amateur troubled by objections from parents and landlords about unsightly aerials. The editor also suggested

connecting up every tree in a small wood to give a "wonderfully effective antenna."

In the June issue of the same journal the Major wrote an article describing his experiments. The eucalyptus trees (transported to California from Australia many years earlier) were found to work better than other trees. A wire was connected to a nail driven into the trunk of a living tree well up in the foliage. An earth consisting of several pieces of insulated wire was buried in a radial manner around the tree. Signals from as far afield as Europe were easily received. No mention of the wavelength is made, however, it seems likely that wavelengths of 1,000 to 10,000 metres would have been used. At the very least the trees would have provided some top capacitance for the 50

to 100 feet long wires connecting the equipment to the nail in the trunk.

The use of an effective earth was not overlooked by the Major, something that today's successful users of vertical antennae also take into account. (Copies of the E.E. supplied by Ivan, VK5QV.) ■

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WATCHING

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BELCOM LS-707	All Mode 430 MHz Transceiver
BELCOM R-707PS	Power Supply and Speaker
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YAESU FT227R	2M FM Transceiver
YAESU FT101E	Transceiver
* YAESU YO101E	Monitor Scope
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* YAESU YC601B	Digital Display for FT101E
YAESU FT301E	Transceiver
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# RTTY IS FUN

Ian Hunt VK5QX  
8 Dexter Ave., Salisbury E., 5109

I built a VDU. Yes! I copied it from an American magazine. What a remarkable piece of electronic wizardry. It had two pages of memory, automatic carriage return/line feed, cursor control, screen read capability, 32 characters per line, erase functions, all sorts of neat features. Modifications were thought up to provide scroll-up facilities, character counting, four pages of memory and many other additional ideas. There was still one thing wrong. As it used ASCII code I couldn't put the thing directly on the air. Oh well, why not build a new terminal unit with all the things needed?

So, to make up some more printed circuits. Two DT600 demodulators solid-state switching board, selective amplifiers and switching for the CRO monitor, DD350 Magnet Driver (to use for hard copy, two AFSK generators, two UT4 UART/FIFO systems (one for Baudot, the other for ASCII code), Baudot to ASCII Converter (using a National MM5220 BL ROM Code Converter), ASCII to Baudot Converter (from the same magazine articles), UART Parallel/Serial Converter and vice versa, Automatic CW identifier, two dual XE6 Crystal Clocks plus power supply. WOW! What a lot of work.

Art work to do, circuits to try out, capacitors and resistors to bridge for accurate values, negatives to be made, more research on circuits, boards to be etched, card frame made up with card guides and sockets, cabinet, panel work, lettering, more metal bashing, bits and pieces all over the place.

Time seems to run short. The project is put aside due to other pressures, complication of circuitry, need to re-think some of the approaches, other activities, WIA work, etc.

Well, I may get around to finishing this most comprehensive project some time in the future. It still looks to be a good system. There will be hundreds of interconnections to be made between boards. More modifications will be in order as new ideas, components and methods present themselves. Lovely ways of storing information, producing pre-programmed messages, inserting corrections, all these possibilities exist.

I promised myself I would not take short cuts and put the VDU on the air without first finishing my all-singing-all-dancing new terminal unit.

So what happened? The ambitious project is still not completed. BUT! I am now



View showing at top homebrew RTTY terminal unit and monitor CRO. Below Model 19 teletype and tape Tx, loop current control and switching box, VDU and keyboard.

on the air with noiseless RTTY. And it took little more than a week of work in my spare time. How? You may well ask.

I would like to tell you about my new VDU system. It is called the "XITEX SCT100 Single Board Video Terminal". (Ref. 1) This unit, which is advertised in *Amateur Radio* has allowed me to get going on noiseless RTTY very cheaply, quickly and easily. For the benefit of you who may wish to do likewise, following is a description of the unit together with some comment on my own personal experiences in getting same going. The XITEX is a complete video terminal mounted on one printed circuit board approximately 5 to 10 inches in size. Mounted on the board are a total of 32 integrated circuits, including a character generator and a micro-processor chip. The board can be obtained with all components mounted in place and tested as a unit, however it is not very difficult to solder in the components yourself, and I find it more fun to do so, and of course cheaper as well. Together with the board comes a handbook which provides full instructions on assembly, testing and operation of the unit. Having assembled the board next comes the matter of the power supply. A wide range of options are available in this area and the circuitry provided allows

the use of any of the following forms of supply:—

- (a) 7-11V DC at 0.75A (max.) unregulated.
- (b) 8-12V AC RMS at 0.75A (max.).
- (c) 5V DC plus or minus 5 per cent at 0.75A (max.) regulated.

Having prepared the system thus far it is necessary to make a certain number of interconnections. These are power supply, keyboard and video display. The power supply connections are made to a 2-pin connector, supplied, in the case of AC supply or via 2 pins of a 30-pin edge-connector in the case of DC supply. If one is already using what is known as an S100 bus system for computer type equipment the board may be simply plugged into the S100 bus. The keyboard connections are made via the 30-pin edge-connector or a separate 16-pin DIP socket. Now for a word about the keyboard. It is necessary that the keyboard be of a type which provides the standard ASCII code output. There are many different sources for such keyboards advertised in magazines including disposal sources. The suppliers of the SCT100 can of course also provide a suitable keyboard at reasonable cost with the unit. (Ref. 2.) The keyboard I use may, however, be of interest to you. When I first obtained same it was of a type providing a computer code called EBCDIC at

the output terminals and used on its board a custom programmed Read Only Memory which had 11 address lines. Some thought on modification produced the solution of reducing the 11 lines of the keyboard matrix to seven lines by using diodes. The seven address lines were then taken to an Ultraviolet Erasable PROM into which I had programmed the necessary information to provide ASCII out for each of the unique codes selected at the input at the press of each key. Selection of Upper/Lower case was implemented using a simple TTL circuit in the form of a latch providing a logic "zero" output for lower case, a logic "one" for upper case when the shift key is held down, locking to a constant "one" when the lock key is pressed and re-setting to a logic "zero" when the reset key is pressed. The output of this circuit is fed to the eighth address line of the EPROM. The use of the EPROM in a socket proves to be most convenient as the data out of the keyboard can be completely changed for special purposes by the simple expedient of plugging in another EPROM containing the requisite programming. This feature and the changes described would not be used by most operators who would simply as stated connect an ASCII keyboard to the VDU board and go from there, so don't become concerned about a seeming complication. This portion of the description was simply included to indicate a method and solution which may be of help to others who may wish to experiment with other keyboards themselves. Incidentally, the power supply from the SCT100 board may be used to supply positive 5 volts to the keyboard you are using.

Connection to the video display may take a number of different forms depending upon the unit you are using and is fairly well covered in the SCT100 handbook. The most popular form of display seems to be a small black and white portable television set. It is usually a simple matter to locate the input of the video amplifier within the set making the connection through an external jack and switch added to the set to allow its use as either a normal TV set or video monitor. In my case it was necessary to invert the video from the SCT100 to suit the TV set. This was simply accomplished by using the inverting input of an operational amplifier together with some DC adjustment to obtain correct levels. This circuitry was built on a small piece of matrix board and mounted inside the back of the television set and supplied with power from a suitable point within the set. The video from the SCT100 is taken from one pin of the 30-pin edge-connector and earth via a piece of light coaxial cable.

Having achieved this stage of progress it is only necessary to switch on, and if the wiring has been done correctly the whole system can be checked out. Now to describe for you just what it can do.

This system will provide at a flick of a switch the following facilities:—

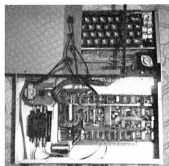
1. ASCII type output for micro-processor applications and other computer orientated systems with both upper and lower case alpha characters, full punctuation, standard symbols and numbers plus 31 special characters intended mainly for mathematical work.

2. A standard set of Baudot characters exactly the same as you would find on any ordinary teletype machine.

Either of these two conditions are selected by means of a single pole two position toggle switch wired to the appropriate pins on the edge connector. In the ASCII mode a baud speed of either 110 or 300 bauds may be selected, again by a toggle switch wired in a similar manner, and in the Baudot mode the standard teletype speeds of either 45.45 (International Amateur Standard) or 7.42 bauds may be selected. It is also possible by using a slightly non-standard powering up and re-setting procedure to obtain Baudot code at 110 bauds. Other baud speeds can be obtained by the addition of an external clock in lieu of the Xtal clock provided on the keyboard. To take the simple view, however, it is merely a matter of taking the output and input connections from the PC board to your usual teletype terminal unit to be on the air with solid state and noiseless RTTY having selected Baudot code and appropriate speed on the SCT100. It is beyond the scope of this article to describe fully the functions of the SCT100 when used in the ASCII mode, however details of a few of the other features of the unit, when used in Baudot mode, may be of interest. The unit provides 64 characters per line across the screen with a total capacity of 16 lines per frame. The first line appears at the top of the screen, as would be expected, with each consecutive line being written below the previous line until such time as the screen is filled up.

At this point the unit adopts a "scroll-up" mode with all the lines moving up one line at a time as the end of the bottom line appears. This means that the top line then disappears off the screen but gives plenty of time to read any text being received.

The unit includes provision for operation from 50 Hz supply but requires a printed track to be broken and a short jumper wire to be added on the board for 50 Hz operation. This option is quite clearly detailed in the instructions and shown on the board and circuit. Normal operation is with white characters on a black background but provision is made for reverse video, i.e., white on black, to be selected. Automatic carriage return and line feed is featured when using either transmit or receive, however a unique function appears under this circumstance. Should the unit come to the end of a line and a manual CR/LF not be received, it carries out the automatic CR/LF function but automatically places an arrow at the beginning of the next line to indicate that this line is a continuation



**Complete VDU, with keyboard in enclosure. Cover partly removed.**

of the previous line. This feature is of immense value when communicating with other operators using the mechanical type machines which generally have a line length in excess of 70 characters.

When baudot operation is selected, only characters normally appearing on a baudot teletype machine can be transmitted. Operation of any other character on the ASCII keyboard will result in nothing at all happening. To those not quite sure as to the meaning of this statement, I might explain that the standard ASCII keyboard carries many more characters and functions than an ordinary teletype keyboard. On an ASCII keyboard figures do however appear as lower case characters whilst on a teletype machine there are special keys to select either figures or letters as the case may be, much the same as a shift key on a typewriter is used for upper and lower case. When using the XITEX unit the micro-processor on the board takes all the work out of this area of operation. If you are typing letters and then you press a key for a figure this fact is recognised by the circuitry which automatically inserts a "figures" shift character and transmits it before sending out the figure signal for the key you have just pressed. Likewise, if you have been sending figures and then revert to a letters key it automatically inserts a "letters" shift before sending the letters character. Very clever stuff indeed, and no knowledge or expertise required of the operator. You simply sit there and press the keys for the letters and figures you wish to send and the rest is all done for you.

Input and output points on the unit also appear on the 30-pin edge connector. Provision is made for various types of input and output levels. Opto-couplers on the board allow you to make your connections directly across the inputs and outputs of a standard machine type teletype loop at high level voltages in either a simplex or duplex mode of operation. The provision of alternative computer type RS232 input/output level points allow simple connection to associated solid state equipment. However, in making your

interfaces with your teletype terminal unit do not make the mistakes which I made through some carelessness and sheer lack of thought. Emitter followers DO NOT pull right down to earth level (logic 0) and one must also remember to check that the sense of signals (i.e., either positive or negative for a mark signal in the teletype terminal unit) is correct, when making interconnections. Simple commonsense can save you a lot of time and effort. Had I followed the correct course I should have had everything working over the period of just a week-end.

So, to re-cap. If you wish to get on the air with silent modern RTTY with a solid state VDU system try the following, even if you are just starting from scratch. Obtain a XITEX SCT100 unit and a suitable ASCII keyboard. Connect it to a power supply as described and a small cheap portable black and white TV set. Connect the output of your RTTY terminal unit either via your selector magnet loop or TTL level output to the SCT100 input. Connect the output of the SCT100 to your AFSK or FSK keyer unit to drive your transmitter. Select Baudot at 45.45 bauds on the SCT100 and go on the air. It's as easy as that.

I have gone to the trouble of writing up this unit as I have for some years spent time drooling over the advertisements in both local and overseas magazines, knowing at the same time that the solid state RTTY gear advertised was so expensive as to be outside the range of my pocket-book. Having discovered the ease, and I emphasize the relatively low cost of the unit I am now using, I thought it only right to let you know that such an item exists and is available in Australia.

Comments I have heard also led me to believe that many people did not understand just what this little unit would do. It is not my intention to provide free advertising for a commercial item, neither to condemn the manufacturers of what may well be other very good equipment also available.

Before I conclude, I would like on the same basis to make known to you a few other matters which may help you in the field of RTTY. Within Australia a group has been established based on the WIA VK2 Division. This Group is known as the Australian National Amateur Radio Teleprinter Society and can be contacted through using the address of the VK2 Divisional HQ at PO Box 123, St. Leonards, NSW 2065. The Society publishes a bi-monthly newsletter called "AREWISE", which is posted to members all over Australia. Cost of membership is only two dollars per year and receipt of "Arewise" will help you in learning more about RTTY operation. The Society can also supply kits such as the well known ST6 RTTY Demodulator at an exceedingly low cost (approx. \$40.00) compared to commercial units, and can also help with spare parts for teletype machines, provide assistance

with RTTY projects and generally help you to get going on this mode.

Another excellent magazine which does not cost too much to subscribe to is the American based "RTTY Journal", of which there is 10 issues per year. This magazine is available for only nine dollars (Aust.) per year as a service (he makes nothing from it) through Norm Wilson VK4NP, who is listed in the Call Book. The RTTY Journal also puts out an excellent Beginners' Handbook which would be of great assistance to anyone just getting started on this mode. The Beginners' Handbook is not, however, available through Norm VK4NP and you would have to obtain same direct from the publisher. (Ref. 3.) I have found that many other excellent articles abound in general amateur radio magazines and literature, particularly the magazine "Ham Radio", so go looking through whatever back issues you can locate. Amateur Radio Teletype is not at all as difficult as it may first appear, so don't be frightened off by thinking it may be too complicated for you.

Also in existence for some time has been the Australian Amateur Radio Teleprinter Group based in Western Australia. This Group puts out a newsletter also and may be contacted through VK6IF, 32 Mayflower Crescent, Craigie 6025. Subscription to the AARTG is four dollars per year, including the AARTG quarterly newsletter. The Group has also in the past put out a kit for the ST5 Demodulator, which is a more simple version of the ST6. I have been advised that Cliff VK6NK is the person to contact regarding this kit. I trust that this article will have been of some interest and help to you in becoming a little more familiar with some aspects of a most interesting mode of operation and one in which a growing interest has lately been evident in this country. So if you have a yen to take part in amateur RTTY operation give it a try. I find that all of the chaps on this mode are always very willing to help any newcomer on their way, so don't be afraid to ask.

#### REFERENCES

1 and 2. Available from the Micro Shop, Box 207, Glwiler, South Australia 5118. Cost of keyboard kit \$70, but can be obtained assembled and tested at an extra charge. Cost of SCT100 VDU board kit \$169. Both prices include tax.

3. RTTY Journal, publisher Dee Crumpton, PO Box 97, Cardiff by the Sea, California 92007. Cost of RTTY Beginners' Handbook \$4.50 US.

DT600 RTTY Demodulator is an updated version of the old faithful ST6 and was originally described in Ham Radio Magazine February 1976, page 8. The DT500 is a simplified version of the DT600 designed with the VHF operator in mind, and described in Ham Radio, March 1976, page 24.

The DO350 is a dual magnet drive for teletype machines and includes timing circuits to operate auto-start on the machines and also to automatically shut down and start up the magnet loop as necessary.

The following items can be obtained from Data Technology Associates Inc., PO Box 431912, Miami, Florida 33143:—

DT600 RTTY Demodulator PC Board, \$12.50 US;  
DT500 RTTY Demodulator PC Board, \$10.50 US;  
DO350 SMD/Motor Control Board, \$7.50 US; D170

Loop-Logic-Polar Interface Board, \$7.50 US; 4 Potentiometer Set for DT600/500, \$2.00 US.

Each of these boards are of high quality and are fireproof. The Demodulator boards are through-hole plated. I have seen these boards as supplied to a local amateur and was most impressed with them. With each board came a most comprehensive handbook with detailed construction and testing information, and even included two parts lists, one in order of component number and the other in order of component value. Instruction on how to solder is even included.

These references together with the information contained in the above article should provide anyone starting off on RTTY with sufficient information as to where to obtain data, components, etc., and provide a guide as to the costs likely to be incurred with such a project.

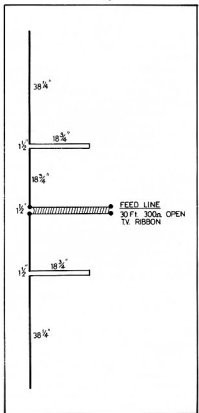
## TRY THIS

### WITH THE TECHNICAL EDITORS

#### A TWO METRE COLLINEAR

Earlier (1963) ARRL handbooks carried a description of a 2 metre collinear. Les VK2AXZ has submitted details of a similar antenna.

A 4:1 balun enables a coaxial feedline to be used. The ARRL suggests the use of stiff 1/8" aluminium wire for the elements, supported on ceramic standoff insulators screwed to a wooden pole. TV screw-eye insulators make a cheaper but less desirable mounting.



# TWO METRE TRANSMITTER FILTER FOR OSCAR MODE 'J'

Joe Reisert W1JR  
17 Mansfield Drive, Chelmsford MA 01824

Many OSCAR 8 Mode J users have been experiencing receiving difficulties due to a large number of birds appearing on the 534.1-435.2 MHz downlink when they are transmitting between 145.9 and 146 MHz on the uplink. This is most often due to overloading and intermodulation in the 70 cm converter due to the proximity of the third harmonic of the uplink transmitter (viz., 437.7-438 MHz).

as shown. This will further reduce harmonic output.

## OPERATION

Tune-up is simple since the filter has a broad bandpass. First set C2 to minimum capacitance and place the filter between the transmitter output and a power output or VSWR meter. With the transmitter tuned to 146.0 MHz, increase the capacitance of C2 until power output is maximum. Caution: do not exceed 50 watts output (more than enough for OSCAR 8 Mode J operation) since the components are not rated for higher power loads. Retuning for 144 MHz operation should not be necessary as the filter bandwidth is quite broad.

If you are fortunate enough to have access to a spectrum analyser, you can tune C2 for minimum output at 438 MHz. This, however, may cause additional loss at 146 MHz. If so, the transmitter output circuit may be readjusted to compensate for the mismatch.

## PERFORMANCE

The 435.1 to 435.2 MHz spectrum will be much cleaner when using the described filter on your two-metre transmitter. Always use the least possible transmitter power, since this will also lower the third harmonic level. Additional separation between the two-metre and 70 cm antenna should also help.

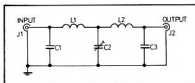


FIG. 1. 148 MHz LOW PASS FILTER  
Insertion loss at 144-148 MHz: Negligible.  
Maximum input power: 50 watts.

Attenuation at 432-438 MHz: 50 dB typical.

Construction and testing: See Fig. 2 and test.

C1, C3 — 22 pF low loss Mica 300 volt min. UNELCO type J101 (Note 1 and text.)

C2 — 10 — 60 pF Mica trimmer with short leads — ARCO/ELMENDO type 404 (See text.)

L1, L2 — 3T No. 14 AWG enamelled copper wire close-wound, 1/4 in. inside diameter (approx. 40 nanohenries).

J1, J2 — Type BNC, UHF or N coax fittings.

Note 1: 22 pF UNELCO Mica capacitors are available from Webster Radio, 2602 E. Ashlan, Fresno, CA 93726 at \$1.75 each plus tax and shipping. Do not substitute other types of capacitors.

There is very little that can be done to the receiving converter without using elaborate filters and high dynamic-range circuitry. However, most of the birds can be eliminated by properly filtering the output of the two-metre transmitter to minimize any third harmonic output.

In my case, I could detect about a dozen such birds varying from just above the noise to 20-30 dB over the noise. Operation on the 435.10-435.2 MHz downlink was almost impossible. Then I added a simple (see Fig. 1) 5 element half-wave-length type of low-pass filter on the two-metre transmitter (a homebrew transistor amplifier operating class B with 40 watts maximum output). There was an immediate improvement with only two weak and three moderate (10-15 dB over the noise) birds. Needless to say, the results were dramatic.

The filter used is not an ordinary low-pass type. It exhibits the characteristics of a 1 to 2 dB ripple Chebyshev design over the 135-150 MHz band. The cut-off frequency is typically 250-275 MHz, and attenuation is greater than 10 dB on the second harmonic (292 MHz) and greater than 50 dB at 438 MHz. Therefore, this design is only recommended for two-metre use.

## CONSTRUCTION

For optimum performance, the filter should be built into a shielded box as shown in Fig. 2. Double-sided printed circuit board is recommended as a suitable ground plane and also makes soldering to C1 and C3 easier. Note that solder should flow on both edges of C1 and C3 for lowest loss and VSWR. Also provide a good ground strap between J1 and J2 to the top side of the printed circuit board

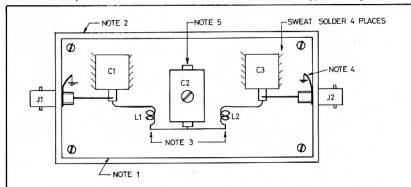


FIG. 2. RECOMMENDED LOW PASS FILTER CONSTRUCTION

## Notes:

1. Use double sided PC board bolted to box.
2. Shielded aluminium box is recommended, approximately 2 1/2 in. x 1 1/2 in. x 1 1/4 in.

3. Keep L1 and L2 separated to cut down on possible mutual coupling.
4. Provide positive ground return such as a strap from connector ground to top side of PC board.
5. Keep leads on C2 as short as possible (see text).

Reproduced from the "AMSAT Newsletter" June 1978.

# DETERMINING ANTENNA SURFACE AREA

Roger Cox WB0DGF

Hy-Gain Amateur Product Engineer

Some methods of determining antenna surface areas have made many false assumptions. Some of these assumptions are:

1. Air flows with perfectly smooth and streamline motion, or in other words, laminar flow.
2. Since assumption is made of laminar flow, it is also assumed that this flow is in a perfect horizontal plane.
3. Since assumption is made of laminar flow in a perfect horizontal plane, it is assumed that the element portion on the leeward side is shaded out by the area of the boom (see Fig. 1).

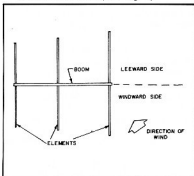
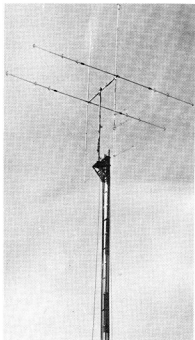


FIGURE 1



The popular "Hy Quad"

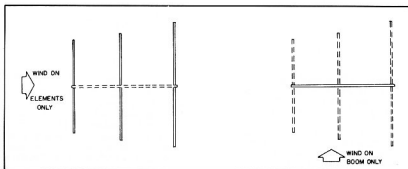


FIGURE 2

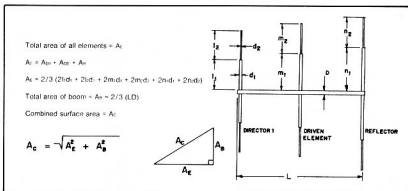


FIGURE 3

In all cases where these antennas would be used outside, you would never have perfectly smooth and streamline motion, but horizontal and vertical fluctuations which when sudden and brief are called gusts. This type of flow would be turbulent rather than laminar. Since there are horizontal and vertical fluctuations, the element portion on the leeward side would not be shaded out. Only if the elements were spaced very close together would you get some shading out.

The Hy-Gain method of calculating antenna surface areas does not use these assumptions. In our method the wind is

projected perpendicularly onto each element (see Fig. 2). The total area of all elements are then multiplied by the 2/3 shape factor for cylindrical elements. The wind is also projected perpendicularly onto the boom. The total area of the exposed boom is then multiplied by the 2/3 shape factor. The resultant total area of the combined elements and boom is obtained by using the Pythagorean Theorem for a right triangle (see Fig. 3). By using this method it takes into account the magnitude of the area from the two directions to give you the best angle of wind to give the maximum area.

## QSP

### AMATEUR DIGITAL RADIO OPERATOR

In Canada rules have been made for a new experimenter class of licence called the Amateur Digital Radio Operator's Certificate. Digital and pulse techniques are permitted in Canada on specified VHF and UHF amateur bands and operators of the new class are only permitted above 144 MHz. Holders of existing AR Op. Certificates and Advanced AR Radio Op. Cert. will be allowed all the operating privileges of the Digital Cert. operators except for pulse emissions.—QST December 1978.

### WALKIE-TALKIES ON 49 MHz

Should be some fun when some of our importers get a shipment of the latest cheap walkie-talkies intended for the US market. The new frequencies allocated in the US for low powered transceivers are around 49.9 MHz. These frequencies have been chosen due to the impracticality of operating 100 mW walkie-talkies on Ch. 14 CB (27.125 MHz).

The band already has a radio club in California.

These little flea powered cheapies could provide quite a headache when they are imported and sold locally.



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**Icom 22S owners!** When you go mobile through the country side, do you miss the news and activity of the area, or miss the openings due to being engaged in driving? If so, this is the ideal scanner for the vehicle.

This article describes how a scanner can be installed in your IC22S. The scanner is easy to build and easy to operate when operating mobile. It has many facilities which, I think, make the extra circuitry warranted.

Only seven ICs, quite a few diodes, a few transistors, two regulators, some capacitors and a little thought makes life easy.

## FACILITIES

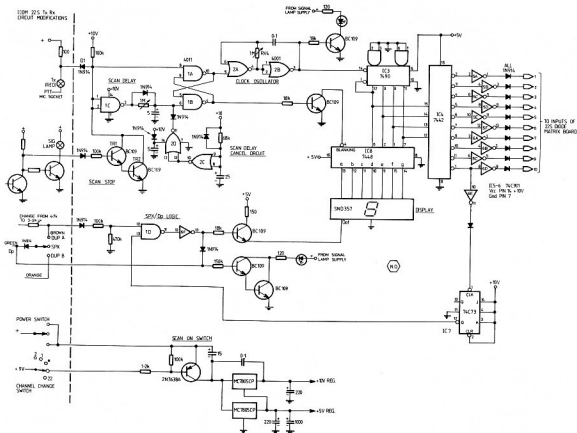
This scanner has a variable scan rate, the speed of which can be varied and adjusted for optimum performance. The author's operates at a rate of 15-20 channels per second. It can be operated faster if desired with a possible deterioration of performance.

If the scan-stop is activated by an incoming signal (by the mute cct) you have two choices. You can listen to the incoming signal and during the inter-over pause break in by simply operating the PTT and replying or you may just listen to the conversation. The break-pause or scan delay time can be adjusted by the pot (RV1) in the circuit to satisfy your desire.

The scan also decides the transmit frequency for which it has to reply and by operating the duplex B (Dp B) switch you can reply on the anti-repeater frequency. The scanner scans 20 channels, i.e. 10 Dp channels and 10 anti-repeater frequencies (Spx). The author's scanner covers anti-repeaters 2, 3, 4, 5, 6, 7, 8, 40, 50, 51, plus 600 kHz above all these frequencies, coming out at repeaters 2, 3, 4, 5, 6, 7, 8, 146.6 (i.e. 40 + 600k), 147.1 (50 + 600k) and 147.15 (51 + 600k).

### CIRCUIT DESCRIPTION

The circuit is very basic but is quite effective. It has a scan-stop and delay circuit consisting of TR1, TR2 and IC1a, IC1b and IC1c which work into the clock



**FIGURE 1: Circuit Diagram IC22S Scanner**

oscillator (IC2a, IC2b). The clock speed is variable (by RV4) for optimum performance. The scan operates from the HEX inverters IC5, IC6 which switch the diode matrix and at the end of the tenth pulse the JK Flip Flop changes state and switches the receiver into the duplex mode to scan 600 kHz above the ten previous channels scanned.

The second 10 channels are indicated on the seven segment display by the dot. The section in the circuit outlined by the dotted line, containing the display unit was made outboard by the author due to lack of space for circuitry and for the want of a position for mounting the seven segment LED in the IC22S so the second 10 channels (Dp) were indicated by a red LED mounted behind the TX lamp of the 22S.

One could eliminate the display unit and the only indication that the unit is scanning would be the LED operated by the BC109 from the clock and the SPX/Dp LED.

The diode (D1) which has its anode connected to IC1 pins 1 and 2 and 8 allows isolation between the scan circuit and the IC22S circuit. The diode placed in the supply rail of IC1 (4011) was put in circuit before D1 so that when the scan was turned off the positive coming from the IC22S Tx circuit (through the 100 ohm resistor) into the gates of IC1 and out on to the scan rail did not get any further and so would not keep the scan going. Other diodes were added for the same reason.

Sometimes the DPX/SPX logic did not

change over. The addition of a 470k ohm resistor from the pin 12 of IC1 to ground cured the problem.

The main problem encountered during construction was that the scan-stop circuitry could not be taken straight from the receive lamp as the time delay for the globe to increase its resistance was enough for the scan to stop too late or not stop at all. The addition of the BC109s (TR1, TR2) and taking the mute from the previous stage provided a solution.

The other most troublesome problem was apparent voltage sensitivity of the scan even though it had integrated circuit voltage regulators. As the voltage increased the mute could not be opened by either the squelch pot not being adjusted or by an incoming signal. The 2N3638A amplified an unwanted signal on the rail of the synthesizer which got into the scanner. The problem was cured simply by decoupling and filtering of the nine volt regulated rail of the synthesizer unit which turned on the scan unit.

Other filtering capacitors were added so that on the changeover from Rx to Tx the scan did not change channels due to spikes on the rail.

The scan indication LED was mounted in the same position as the signal lamp using the same positive as same and the DPX/SPX LED also. The leads were brought past the TX lamp and through the hole behind the channel change switch.

If the resistor R157 (4.7k) in the Dp A circuit is not lowered to about 2.2k in the IC22S receiver circuit when the scanner unit is on the logic threshold between Dp A and SPX and operation may be affected. If the DPX/SPX LED is eliminated it will work on 3.9k ohms although 2.2k ohms is recommended.

I built the unit on vero board and mounted it on the same side but to the back of the synthesizing board. It was not necessary for any shielding from any other circuitry as was first thought.

This unit was built by VK6JL (Chris), who found a problem which mine did not have. Sometimes when the channel change switch is rotated while the receiver is in the SPX mode, it will go out of sync. (meter lamp extinguishes) and the signal lamp illuminates. He cured these problems by two circuit alterations. They were by placing a 1000 microfarad capacitor across the 5 volt regulated rail of the scan. This also allowed the unit to be turned off momentarily, as may occur when starting the car or switching to accessory, without losing its programming. He also introduced the scan delay cancel circuit as he found that if the delay circuit was too long the scanner started from scratch when he turned off his car ignition and he missed a fair deal of the conversation. With this circuit it will start from scratch but there will be no delay before it starts scanning. ■

## ARCTIC/ANTARCTIC AMATEUR

Dick Goslin VK3SV

Amateurs who have worked VK0JC and been asked "Please QSL via OZ8AE" must be aware that both call signs belong to the same operator — Jorgen ("Joe") Christensen, whose home QTH is Nykøbing.

Joe is Radio Officer on M/S "Nella Dan" which, under charter to the Australian Government, transfers personnel, equipment and stores between Melbourne and our ANARE bases in Antarctica. Joe received his VK licence in November 1978 and with approval of the ship's Master and owners, and the Danish radio authorities, operates on our amateur bands, both maritime mobile and whilst the vessel is berthed or anchored at Australian ports and bases. He runs a TS520S from his cabin next to the radio room with dipoles for the various bands, and works both SSB and CW, mainly the latter.

A small ship of some 2000 tons and 70 metres in length, "Nella Dan" nonetheless has room for three helicopters and a small fixed-wing aircraft on its covered after-deck. It also carries a year's supply of provisions and water for emergency use

should the vessel be caught in the ice. Equipment, diesel fuel and foodstuffs for base personnel are carried in the forward hold. In bad conditions, the Master is able to take full control of the ship's movements and speed from a miniature "bridge" atop the foremast.

Joe's duties extend far beyond what is usually associated with a radio officer. He is responsible for payment of the crew's wages, catering records, and many other aspects of the ship's running costs and performance as well as daily reports to the owners in Copenhagen and all other communications. In short, he could well be described as "ship's secretary", with complete knowledge of the day's "doings" literally at his fingertips.

His pedestal-mounted chair is bolted securely to the steel deck, and well it needs to be. In heavy weather "Nella Dan" may roll up to 50° each side of centre, and even though firmly seated Joe needs a tight left-hand grip on one of the rack handles in order to use the key or keyer with his right hand. (Wonder how some of we land-lubbers would fare under these conditions!)

Equipment in the radio room includes a recently-installed solid-state transmitter covering all modes LF, MF and HF to 30 MHz. Full RTTY facilities are located in another corner of the room. An instrument adjacent to the bridge gives LED displays of latitude, longitude and GMT, whilst another, activated by signals from one of the Russian satellites, provides a printed read-out of the extent and location of pack-ice.

By the time this appears in print, "Nella Dan" will have returned to Copenhagen, and Jorgen Christensen will be enjoying some well-earned leave before joining another of the company's ships and heading north to Greenland.

OZ8AE/VK0JC is a man of many parts (geographically) and many accomplishments (professionally). On the infrequent occasions when he is able to spend a few weeks at Nykøbing, he provides pleasure for others as well as himself with his electronic organ. ■

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# ARE YOU INSURED?

Mike Richter VK2BMM  
NSW WICEN Deputy Co-Ordinator

One aspect of modern society's search for security is that we pay a small amount of money regularly to insure against the possibility of a major loss due to accident or wilful damage.

The Amateur Operator has several special insurance needs and hopefully the following information will help you obtain sufficient coverage at a reasonable price.

The type of insurance coverage you will need as an Amateur may be considered in the following categories:—

1. **PERSONAL Insurance** to cover you against illness or injury is really required by everyone but a special need exists if you intend to take part in WICEN exercises or operations as you may be exposed to additional risks. If called out by the State Emergency Services you are covered under their insurance, however under all other situations you are uninsured. It was for this reason that NSW WICEN has taken out Personal Insurance up to \$30,000 per person with the Government Insurance Office to provide coverage during operations as well as exercises.

2. **PUBLIC LIABILITY Insurance** to cover you against the possibility of being sued by a member of the public is required by anyone who has aerials that could fall on someone, whether inside or outside your property. Public Liability insurance up to \$250,000 is usually included with Home Contents Insurance but you should check with the company to see if it covers you against collapsing transmitting aerials. WICEN operations also create the possibility of being sued, therefore NSW WICEN has coverage for \$500,000 Public Liability with the Government Insurance Office.

3. **EQUIPMENT Insurance** to cover you against damage to transceivers or aerials due to theft, fire, storm, etc.

If you only use your equipment at home it can be included in Home Contents Insurance, but some companies may require you to list expensive items or unusual items (transceivers!). The cost is around 0.6 per cent but depends on the area you live in.

If you have your equipment permanently mounted in the car, then it could be added to your vehicle's Comprehensive insurance, and it is then covered for all risks that your car is covered for. The cost of this insurance is determined by adding the cost of the equipment to the insured value of the vehicle and therefore depends greatly on the vehicle cost, no claim bonus, area of residence, etc. Do not succumb to the common pitfall of believing that your Comprehensive insurance covers equipment in the car under the Personal Effects category! This is usually only \$100 and only applies to wallets, watches, etc., that may be lost or damaged in an accident and not transceivers.

If you use your equipment both at home and outside then you really need Personal Property Insurance (previously called All Risks), which covers your equipment against theft, fire, collision, etc., no matter where it is. This usually costs 2 per cent per annum of the insured value and the company will require specific details of each item to be insured. One company provides a "Multirisik" extension for equipment covered by a Home Contents policy that provides additional coverage when

the equipment is outside the house and only costs 1 per cent (in addition to Home Contents cost). This is cheaper (0.4 per cent) than Personal Property Insurance but provides almost as much coverage. Do not expect your Home Contents Insurance to cover your equipment outside the house. Even though policies do provide for items being "temporarily removed" from the house the coverage is very limited and excludes theft and items in a vehicle!

Providing equipment insurance through WICEN would prove too expensive therefore Amateurs are urged to provide their own insurance which will give coverage for normal use as well as WICEN operations.

Aerials masts should be included in the house insurance policy. Make sure that the company includes the mast in the policy, in writing, and that you are covered for the cost of replacing the mast and aerials in case of damage as well as the repair of any damage to cars and houses that the mast, aerials and guys may cause on the way down!

You may decide the insured value of your equipment within the limits of its full replacement cost (i.e. the present new cost of an equivalent item) or its depreciated value (original purchase price depreciated up to 30 per cent each year). Again you should consult the company who will suggest a value but you can have this changed if you feel it is too high or too low. ■

## QSP

### 4U1ITU QSL CARDS

QSL cards for all contacts from 4U1ITU are written at the time of the QSO by the operator (note: visitors wishing to use 4U1ITU must first demonstrate their ability to use and tune the equipment because of operators in the past not familiar with the equipment). These QSL cards go through QSL Bureaux. Direct QSLs are not exchanged. Incidentally, if you intend visiting Geneva and wish to use 4U1ITU a letter must be sent at least four weeks in advance to 4U1ITU, PO Box 6, Place des Nations, 1211 Geneva 20, Switzerland.—RI News October 1978.

### SORTING OUT THE YU's

"According to the present national Amateur Radio Regulations, members of the family of the owner

of the station licence are allowed to operate if they have passed a kind of operator's examination. In this case, letters X or Y may be added to the original call sign. If it is tradition in YU that the letter X should be added if son or daughter operate a station, and letter Y should be added if wife or husband operate (e.g. YU1UK/X, YU3AE/Y, etc.)."—RI News October 1978.

### MAINLY FOR "OLD-TIMERS"

Lord, thou knowest better than myself that I am growing older and I will some day be cold. Keep me from getting talkative, and particularly from the fatal habit of thinking I must say something on every occasion. Release me from the craving to try

to straighten out everybody's affairs. Keep my mind free from the recital of endless detail, give me wings to get to the point! I ask for grace enough to listen to the tales of other plans. Help me to endure them with patience. But seal my lips on my own aches — they are increasing and my love of rehearsing them is becoming sweeter as the years go by. Teach me the lesson that occasionally it is possible that I may be mistaken. Keep me reasonably sweet; a sour person is one of the crowning works of the devil. Make me thoughtful, but not moody; helpful but not bossy. With my vast store of wisdom, it seems a pity not to use it all — but thou knowest, Lord, that I want a few friends at the end. By "Another QT". From QTC, October 1978. ■

# TELEVISION IMAGES FROM THE PAST — THE ORIGINAL SLOW SCAN?

Gil Miles VK2KI  
31 Beaumont St., Campsie, 2194

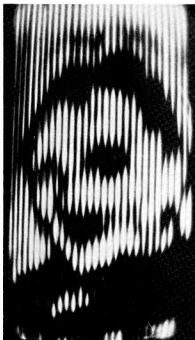
From the middle of the 19th century experimenters, physicists, engineers and others were striving for the goal of television.

The majority of these schemes were on paper only and in the years that followed the photo electric effect of selenium, the scanning disc, the amplifying valve and the neon lamp were discovered.

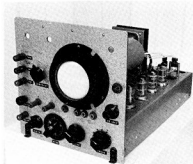
In 1923 John Logie Baird was the first to put them all together and come up with a workable mechanical television system. He was also demonstrating at that time 3D, colour, and infra-red transmissions which he called "NOCTOVISION" or night vision.

His mechanical system placed severe limitations on the picture size 1 in. x 2 in. and picture detail of 32 lines. Using a frame rate of 12.5 pictures per second the base frequency becomes 400 Hz and with picture information added bandwidth increases to about 7 kHz. These frequencies were used to amplitude modulate an RF carrier.

Baird was also able to record the picture information on to 78 r.p.m. shellac phonograph discs. He called this "PHONO-VISION". The records were available to buyers of his receivers to be played into their "televisors" for tune up purposes. I



1926 "Baird" TV image from Phonovision disc signals into 3 inch monitor.



3 inch TV Monitor for Baird TV. 32 lines, 400 Hz line rate, 12.5 Hz frame rate.

know there were at least two of these discs still in existence, one held by the BBC and the other by IBA Television Galleries in London. Both of these sources during my recent visit to the UK, re-recorded the image signals on to 1/4 in. magnetic tape at 7.5 inches per second.

On my return to Sydney I re-worked an old 3 in. CRO to operate as a monitor on the Baird System frequencies. There are eight head and shoulder images of well known people and a wedge shape test pattern on these discs.

It is surprising, after more than 50 years and re-recording, that there is enough detail left to produce recognizable pictures. Although there were no special synchronizing signals transmitted at that time it was not difficult to devise sync from the line frequency to hold the picture quite steady for photography. ■

## THE MELLISH REEF DX-PEDITION — 1978

What'll they say of Oct. 3?  
When Hell broke over the Coral Sea.  
And all the world sought recognition  
In the Mellish DXpedition.

When Earth's shroud, the field 'magnetic'  
Was scorched, convulsed by the pace  
frenetic  
Of calls of Hams out to make  
A QSO — a ten sec break.

Beams were swung and sets were tuned  
And if truth is known, many ruined  
As the gear ran hot, ran hot,  
Aiming at that tiny spot.

Ops at rigs with purpose bent —  
Not for hours but days they went.  
Like the buzz of swarming bees

— or discordant symphonies.

Forgotten were both food and sleep,  
Chores and work — they could keep —  
Happenings were beyond belief  
In the struggle for the Reef.

Perhaps Ole Ionos smiled on you  
— and at last you got through.  
Your call plucked from the line  
With a lovely 5 x 9.

With voice gone hoarse and aching wrist,  
Each DXpeditioner did persist,  
To add another to the list,  
So that no one would be missed.

But all things must come and go  
And so has VKs hottest "show".

Now from the Reef, no sounds, no words  
Mellish is back with the birds.

So pass the 807's boys:  
Here's to all that strife and noise.  
Cheers to the blokes who made it GO,  
Let the liquid "amber" flow.

When cobbers gather in the shack  
Let the rag chew wander back —  
Flip the log book to the leaf  
Of the Saga of the Reef.

Point up to the QSL  
— and say, "thereby hangs a tale to tell"  
— and tell it with the utmost relish  
About the day you knocked off MELLISH.

Alan Shawsmith VK4SS ■

# HOW TO LEARN FRENCH — THE HARD WAY

John Scougall VK5YY  
The Villa, Piccadilly Road, Crafers 5152

**Every award hunter needs a good aerial. The author gives his story.**

For the award hunters there are several French awards which are very attractive and well worth a place on the shack wall or under the glass of the operating table.

Apart from those which relate to the Pacific and Antarctic areas (DTA or Diplot des Terres Australes and ARANC or Association des Radio-amateurs en Nouvelle Calédonie Diplome for contact with six amateurs in New Caledonia) and which for the Australian amateur are relatively easy to come by, there are two which relate to metropolitan France and which are more difficult to land.

One of these is awarded to radio amateurs who are able to confirm contact with one station in each of the 17 Provinces of France and which include the Island of Corsica. It is called the DPF (Diplome des Provinces Françaises) and is perhaps more colourful than its bigger brother which is called the DDFM (Diplome des Départements Français de la Métropole) and which involves contacting one station in each of the 95 Départements (Counties) of France — all on the same band and in the same mode. The basic certificate is awarded after the first 20 Départements have been worked and confirmed and after that, stamps of merit are awarded for contact with each 10 additional Départements which are verified until the stamp of excellence is awarded after confirmation of the entire 95. Something like our ACE Award.

After four years of intermittent effort and a score of 70 out of the 95, I decided that a 2 wavelengths V beam on 14 MHz and no linear amplifier or compressor was not

quite equal to the task, particularly as the V beam could not quite be pointed in the right direction because of the lie of the land at my QTH. Something had to be done to effect some improvement and I decided that the best way to achieve this was to work on the aerials which is what this article is really about.

As one of my regular contacts and good friend Pete Bowman VK5FM had assured me that putting up a quad for 20 metres was "like wrestling with an octopus" it was decided that maybe a yagi would be nearly as good and as a VS33, the Japanese equivalent of the TH3, was available second hand, this was purchased. The idea was to mount it on top of the two section wind up tower which was used to support the wire antennas at my QTH.

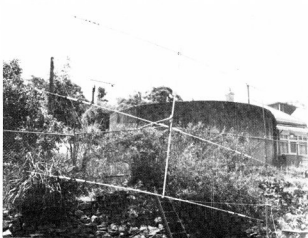
As one of the problems that I have noticed with beams is that they are "way up there" but not out of harm's way as I found out in Alice Springs when a hail-storm detuned the traps on my ZL4BFU style monobander. Furthermore, as I never feel quite at home unless my two feet are planted firmly on the ground, we had to find a way of converting the tower into one of the tilt over variety so that we could bring the beam down when it was necessary to make adjustments.

Since the tower was already pivoted at the base it is possible to tilt it over but with a beam on top it calls for two and a half men and a carton of beer as the weight is considerable. In addition one has to wait until the weather is exactly right, which is not very often in the Adelaide Hills. Having read in "Hints and Kinks" by ARRL that an amateur in "the States" had solved a similar problem with a tele-

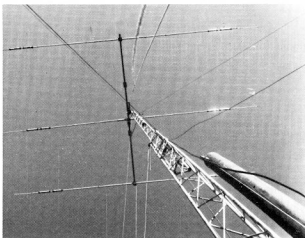
phone pole and a block and tackle I resolved to try something along these lines.

A telephone pole 30 feet long and 7 inches in diameter at the top was purchased from the local dump and it was delivered to the site where it lay for several weeks. Eventually a contractor who specialised in felling trees agreed to put it in the ground alongside the tower in line with the direction of pull and about two feet away from it. With the aid of Roger VK5RW a four inch pulley wheel was mounted inside a roughly fashioned but sturdy housing and mounted near the top of the pole. This job was done whilst the pole was still on the ground and the pulley was held in position by a long U bolt which ran right through the width of the pole. So that the pulley wheel would be free to rotate without scraping the sides of the housing, two washers were made up from tin plate as it was feared that the cable might slip down the gap alongside the wheel if it were wide enough.

To cement the pole in the ground near the tower took four strong men about an hour to do as telephone poles are heavy and cumbersome devices. After the hole has been dug down to about five feet, it is stepped on one side so that the toe of the pole can be angled into it. A crow-bar is positioned on the opposite side of the hole so that the pole will not tear the side on the way in. It should be canted slightly outward from the tower so that the top of the pole is two inches or so further from it than the base. This allows for movement towards the tower over a period of time caused by the weight of the tower as it is being raised and lowered. This can cause the pole to shift in the ground slightly.



View from the tennis court side



And she is up — ready to work the DX

The cable is attached to the tower about two-thirds of the way up the first section at about 20 feet off the ground. The tower is lowered to its telescoped height of 22 feet before it is tilted. The cable, which is heavy duty steel type, is passed through the pulley and down to a McPherson spur gear ratchet winch which is mounted on the pole facing the tower at a convenient height. The winch is capable of taking a 5000 lbs. (2272 kgs) strain and provides a choice of two ratios, the lower one being 10 to 1. It is possible that a lighter winch could serve equally well in this application. For light towers, a section of two inch water pipe could take the place of the telephone pole. The pulley must be so placed that the pull of the tower is in a straight line. The pole can be turned in the hole before it is filled in by passing a rope around it and pulling it in the desired direction. This is good exercise even for a strong man.

The day chosen for raising the mast was fine with a light breeze. Ropes were attached to the mast and rigged so that any tendency for side swing could be counteracted but in conditions of light wind this did not appear necessary and once the beam had been assembled and bolted into position the rest was easy and allowing for time to find a camera and take a photograph the mast with the beam on top was up and fixed safely into position in less than ten minutes. The only casualties in the operation were two tomato plants that were trodden down whilst the telephone pole was being manoeuvred into the hole.



Roger Wreford VK5RW turns the handle to raise the antenna. We didn't even have to get the XYL to take the washing off the line.

For a while it looked as though the problem of keeping the pulley moving freely without leaving terra firma to oil it from time to time might have meant getting the ladder out after all. However, a light piece of half-round dowelling was attached to the end of a long length of light timber and a wire swing which held a small

container (pill box or similar) arranged so that it could be turned upside-down, was fixed to the end of the dowelling rod. In this way one can send the oil up to where it is needed and stay on the ground at the same time. Be careful not to stand directly below whilst performing this delicate task. ■

## THE BASIC PRECEPTS OF SCIENCE

Submitted by E. Renouf VK2AWR

**Gary Owen, of New Mexico, has supplied these interesting observations after many years of Amateur Experiments. His experience and observations are the same as ours.**

### ALLENDOERFER'S AXIOM —

When all else fails, read the instructions.

### BASSAGORDIAN'S BASIC PRINCIPLE AND ULTIMATE AXIOM —

By definition, when you are investigating the unknown, you do not know what you will find or even when you have found it.

### CALLAHAN'S COMPENSATION COROLLARY —

The experiment may be considered a success if no more than 50 per cent of the observed measurements must be discarded to obtain a correspondence with theory.

### FINKELRAT'S FUTILITY FACTOR —

No experiment is ever a complete failure, inasmuch as a well-written account of it can serve admirably as a bad example.

### FLANNERY'S EFFECT —

Those items most urgently needed are inversely available to the degree of urgency of the need, i.e. in any pile of papers,

when search commences at the top, the sought-after paper is at the bottom or vice versa.

### FLIEGELBAUM'S LAW OF THE

**PERVENSITY OF INANIMATE OBJECTS —** Any inanimate object, regardless of its composition or configuration, may be expected to perform at any (unpredictable) time in a totally unexpected manner for reasons that are either totally obscure or completely mysterious.

### GUMPERSON'S LEMMA —

The probability of a given event occurring is inversely proportional to its desirability.

### HORNER'S FIVE-THUMB POSTULATE —

Experience varies directly with the amount of equipment irrevocably ruined.

### LOUGHRIDGE'S IMMUTABLE REALITY —

The intensity of the desirability of an event is directly proportional to its occurrence at a wholly inopportune time.

### MURPHY'S LAW —

If anything can go wrong, it will (e.g. if you drop a piece of toast, it will inevitably fall jam-side down).

### PATRICK'S THEOREM —

If the experiment works, you must be using the wrong equipment.

### SCHIMMELFENNING'S CONSTANT —

That quantity which, when multiplied times, divided into, added to, subtracted from or taken to the power of the answer you got, yields the answer in the back of the book.

### SPINKENHEIMER'S SPARE PARTS PRINCIPLE —

The accessibility, during recovery of spare parts which fall from the workbench, varies directly with the size of the part and inversely with its importance to the completion of the work under way.

### WIRETRACK'S WELL-ORDERED PRINCIPLE —

Those supplies necessary for yesterday's experiment must be ordered by no later than noon tomorrow.

### STAPP'S LAW —

The Universal aptitude for ineptitude makes any human accomplishment an incredible miracle.

E. Renouf VK2AWR ■

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Application	SSB Transmit	SSB Receive	AM	AM	FM	CW RTTY	CW RTTY
Number of Filter Crystals	5	8	8	8	8	4	8
Bandwidth (6 dB down)	2.5 kHz	2.4 kHz	3.75 kHz	5.0 kHz	12.0 kHz	0.5 kHz	0.5 kHz
Passband Ripple	< 1 dB	< 2 dB	< 2 dB	< 2 dB	< 2 dB	< 1 dB	< 0.5 dB
Insertion Loss	< 3 dB	< 3.5 dB	< 3.5 dB	< 3.5 dB	< 3.0 dB	< 5 dB	< 6.5 dB
Input-Output Termination	Z <sub>t</sub> 500 Ω C <sub>t</sub> 30 pF	500 Ω 30 pF	500 Ω 30 pF	500 Ω 30 pF	1200 Ω 30 pF	500 Ω 30 pF	500 Ω 30 pF
Shape Factor	(6:50 dB) 1:7 (6:80 dB) 2:2	(6:60 dB) 1:8 (6:80 dB) 2:2	(6:60 dB) 1:8 (6:80 dB) 2:2	(6:60 dB) 1:8 (6:80 dB) 2:2	(6:60 dB) 1:8 (6:80 dB) 2:3	(6:40 dB) 2:5 (6:60 dB) 4:4	(6:60 dB) 2:2 (6:80 dB) 4:0
Ultimate Attenuation	> 45 dB	> 100 dB	> 100 dB	> 100 dB	> 90 dB	> 90 dB	> 90 dB
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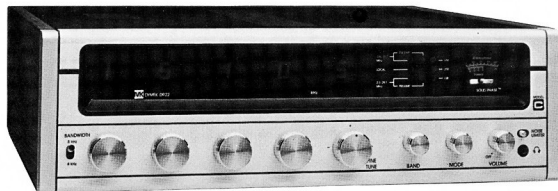
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XF901 USB	6998.5 kHz	\$4-75
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F-06 Crystal Socket (HC25/u)	50	

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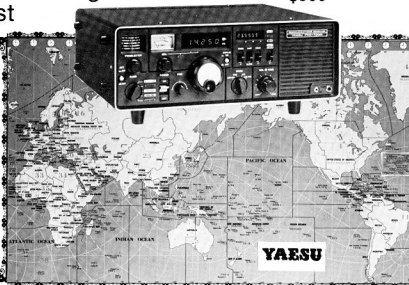
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- **Frequency range:**

0.25 — 29.9 MHz

- **Modes of operation:**

AM, SSB, CW

- **Sensitivity:**

SSB/CW — Better than 0.7  $\mu$ V for S/N 10 dB AM — Better than 2  $\mu$ V for S/N 10 dB (400 Hz 30% modulation).

- **Selectivity:**

SSB/CW  $\pm 1.5$  kHz (–6 dB),  $\pm 4$  kHz (–50 dB)  
AM  $\pm 3$  kHz (–6 dB),  $\pm 7$  kHz (–50 dB)

- **Stability:**

Less than  $\pm 500$  Hz drift for any 30 minute period after warm-up.

- **Antenna requirements:**

Random wire for 0.25 — 1.6 MHz 50 ohm unbalanced feed for 1.6 — 29.9 MHz

- **Speaker impedance:**

4 ohms

- **Audio output:**

2 watts

- **Power requirements:**

100/110/117/200/220/234 VAC, 50/60 Hz

- **Power consumption:**

25 VA

- **Size:**

360(W) x 125(H) x 295(D) mm

- **Weight:**

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# A MOBILE WITH A COAST-TO-COAST GROUND SYSTEM

Dianne Main VK6NGQ  
P.O. Box 463, Kalgoorlie, 6430

On September 1st, 1978, Bill Main VK6NDZ commenced operating as a railway mobile station by contacting A4XGY at 0435 GMT on 28.595 MHz. Since then many VK and overseas amateurs have become familiar with the voice of "VK6NDZ railway mobile." The success of his operation has amazed no-one more than himself.

The often surprising signal reports obtained by this very QRP station are attributed to an extensive ground system, which extends, in fact, from the Indian Ocean to the Pacific Ocean; i.e. the railway line itself which is continuous between Sydney and Perth.

Bill's railway mobile station is very simple and consists of a TenTec Argonaut 509 transceiver with an input power of 5 watts. The antenna is a stainless steel 1/4 wave whip on 10m with centre loading for 15m and 80m. The loading coil/coils not in use are shorted out. Most guards' vans have brackets either side which are

used for mounting kerosene lamps in the event of an electrical failure in the van. However, Bill finds them far more suitable for mounting his antenna! Power to the transceiver, on passenger trains is provided by using the 240V AC generated on the train and on goods trains the 24V DC supply is reduced to 12V using a regulator. Many thanks are owed to VK6ZGO, Lewis Pannell, who designed and constructed the antenna at extremely short notice in July 1978. Bill normally uses a headset for ease of operation.

He has worked all VK call areas including VK9 and VK0 from the train. Other countries worked include: W, VR1, ZL, P29, HC, G, HB, YB, 9M2, 9V1, JA, CT, A4, ZS, 9J, UA, and 3B8.

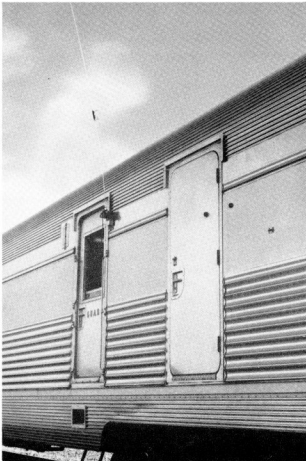
Recently the Perth Radio League, of which Bill and myself are members, introduced 3 Awards: These are: the WAY 79 Award, in celebration of WA's 150th Anniversary; the Black Swan Novice Award and the Zone 29 Boundaries Award.

Whilst Bill can assist stations to qualify for two of these awards simply by virtue of being a VK6 novice station, the unique mode of operation enables him to qualify many stations for the Zone 29 Boundaries Award. To qualify for this award stations need to work 1 mobile station whilst that station is actually crossing a Zone 29 boundary. Bill regularly crosses the VK6/VK5 border during his work as a railway guard. He is also the Awards Manager for the Perth Radio League. Details of the awards can be obtained by writing to him at PO Box 463, Kalgoorlie, WA 6430.

The Perth Radio League also has a Club station with the callsign VK6NFL, which at times may be used by Bill whilst rail mobile.

In the near future he hopes to increase the power of his station to 30W PEP by utilizing a small linear.

If you hear Bill operating rail mobile at any time, give him a call, he'll be more than pleased to confirm any contacts made from this unusual mobile station. ■



LEFT: Antenna mounted on bracket on side of Indian Pacific guard's van.

BELOW: TenTec Argonaut 509 in operating position on a goods train. Regulator for reducing 24V DC to 12V on floor of train.



# COMMERCIAL KINKS

RON FISHER  
VK3OM

Modifications to the FT-101 to cure strong signal overload, published in the November 1978 issue of *Amateur Radio*, has proved to be useful to many 101 owners, but at the same time perhaps caused a little confusion where the details do not exactly apply to your particular transceiver.

A recent letter from Les Diener VK5NJ helps to sort some of these problems out. Over to Les.

"Having implemented the modifications on my FT101B I find the results most pleasing and certainly transform what is normally a noisy receiver into a really first class unit which would compare favourably with any good "ham" band receiver. The signal to noise ratio is the most noticeable improvement even though the mod. is essentially intended to reduce front-end overload. It certainly does this also.

Previously I have been most satisfied with the AGC amp designed by Arn VK5XV, using a UA741 IC, and this certainly eliminates front-end overload, but the ZL2BAF mod. of applying AGC to additional stages is better and is a sound theory and good design practice.

Actually some sorting out was necessary with my particular unit, Serial No. 107936, as several minor points did not agree with the article and are described as follows:—

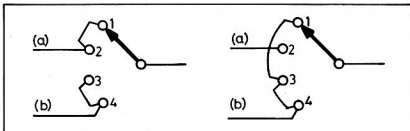
1. The bi-polar transistor preceding the noise gate is Q1 in my unit and not Q2 as stated in the article.
2. The base bias resistors are R1 and R2 (4.7K and 22K respectively) and not R5 and R2.

Once this was sorted out the job was quite simple. Actually, resistors of 1 meg and 2.2 meg were used in lieu of 1.8 meg and 1.2 meg as recommended, the latter values not being on hand.

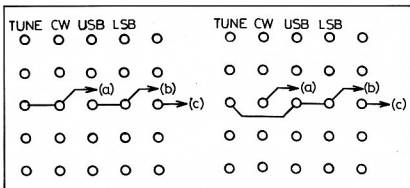
A complete re-align (as described in the handbook) was necessary to make sure all circuits were peaked, but overall the modification is a very worthwhile improvement for any FT101."

Now a simple modification to the popular TS-520 from Alan Bolton VK5TT. This one will interest the CW operators.

"The CW filter of the TS-520 is much sharper than the SSB filter, which is ideal when listening to a CW signal once it is tuned in. When tuning across the band for a CW signal, or listening to a reply to a CQ call, the wider bandwidth of the SSB filter is more convenient. This filter can be selected using the mode switch by turning to the USB or the LSB positions, but this also affects the audio note of the CW signal. This means that once the signal has been identified with the wider filter it is difficult to switch to the CW filter without losing it.



Physical layout of the mode switch contacts viewed from underneath  
(a) — brown (to CW filter)  
(b) — orange (to SSB filter)  
(c) — orange (output of switch)



Circuit diagram of the change to the mode switch  
1 — TUNE 2 — CW 3 — USB 4 — LSB  
(a) — brown lead to CW filter  
(b) — orange lead to SSB filter

It is possible to change the TS-520 mode switch so that the tune position is used to give the wider SSB filter with the same audio note as for CW reception. Normally the tune position on the TS-520 uses the CW filter; changing to the SSB filter simply involves changing over one lead on the mode switch.

The mode switch has 5 wafers, and the filter selection is on the centre wafer. Access to the lead is obtained by removing, in sequence, the TS-520 covers, dial, knobs, nut on channel select spindle and then the decorative front panel. Then the JYJ/WWV switch can be unscrewed and moved, with the leads still connected. The mode switch can be moved also, giving access to the terminal to be reconnected. The physical layout of the mode switch contacts are as shown.

After this modification the tune position can be used to locate the CW signal with the wider filter. Once the signal has been found the audio frequency can be adjusted so it will fall within the narrower passband of the CW filter while the mode switch is in the tune position. The audio note will now be unchanged when the CW filter is used. It should be noted that on the wider bandwidth some CW signals may be on the

incorrect (upper) side of the demodulating carrier, but this can be realized by tuning across the CW signal. The fact that the note of the CW signal is unchanged when switching between filters makes the search for them far more convenient."

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# NOVICE NOTES

## THE CQDX RADIO GROUP

I became an amateur purely by coincidence. I spent most of my life as a musician but gave that away shortly after I married. I'd heard of Amateur Radio of course, but I'd always imagined that the level of knowledge was far too hard to obtain. Through my love of music I'd developed an interest in the technical side of audio, and that was the field in which I was involved when our son Robert was born. The night he arrived on the scene changed so many things that I find it fascinating to look back and see how many people's lives it changed. This article is to do with radio so I hardly think it is relevant to mention the obvious changes that occur when a man becomes a father for the first time.

Quite a few people had said they could not imagine me walking down the street pushing a pram, but that is in fact just what happened. The difference was that I had a one channel walkietalkie antenna sticking up out of the "Mobile" and Mum was back at the "Base" with the other unit. I can't remember what the call sign was now . . . V followed by about five

figures I think. But at any rate it was very useful for obvious reasons.

The puzzling part was that I kept hearing strange call signs such as "Foxrot Charlie One" and others, and I found that I was not the only one on the air. Evidently there was something called CB around which needed investigation. I became a CBER, and CB then was a little bit different from what it seems to be now.

I will never knock CB because it brought together a lot of very decent men (and women) who might otherwise never have got to know each other. What fun we had, ragchewing, looking for "Clowns", having "Eyeballs", etc. A mixed bunch of guys and gals, but within that bunch quite a few were genuinely interested in radio communication. When AM CB became crowded we moved "Up" to sideband. The lure of skip and "DX copies" added to the interest and the nucleus of a club formed, although we didn't know it then.

I couldn't help thinking that there had to be something more to radio than this. A chance meeting with Howard VK3ZJY, who was instructing Amateur Radio, found me attending his classes. I discovered that the best way to learn is to teach, and I set up a radio school for the members of our little group at my home. Three of us subsequently obtained licences and that attracted a few more.

By now the CB scene had become what it is today, and the serious radio enthusiasts were tending to go all out for their Novice licences or move into the UHF bands on CB. Many still stayed with 27 MHz so our Club, the CQDX Club, was formed, with myself as secretary. Initially, most of the members were young, but now more of the older men were joining and many are the same ones who used to ragchew on 27 MHz sideband. The wheel is turning full circle, but the circle is far far wider.

I find it difficult to describe my feelings when I first set out with my own "Call". It was like watching the world from behind a window, then suddenly walking outside with the horizon stretching in every direction. Romanticism . . . perhaps, but that's how I felt and I wonder how many others have shared that feeling. My instructor Howard, Harry VK3EK, Len VK3NAC and others had demonstrated courtesy and proper procedure, as I watched them operate their stations and I have tried to emulate this and in turn pass it on to the members of our group . . . thus the reasons for my notes.

Generally I have found that by nature most amateurs are individualists and I accept each in this way. Such thinking is reflected in the Constitution of our Club, membership being open to anyone with a genuine interest in radio COMMUNICATION, and I stress the last word, as it includes CBERs, SWLs, Amateurs or anyone interested in the interchange of ideas between people. Radio just provides the com-

mon ground. Maybe we don't all live up to such high ideals, but I think most of us try.

The name was of course derived from the fact that CBERs and Hams alike use the term CQDX . . . it means I wish to talk to someone . . . what a good idea in the materialistic world we live in these days.

I like DX . . . those who have heard me working late at night will doubtless confirm this, but I also like to stop and talk . . . to find out something about the other guy, providing of course that there are not others waiting in a pile up, and at least then his card, if and when I get it, will mean just that much more. If Robert ever follows in my footsteps . . . I sincerely hope that this is one aspect of Ham Radio that he will adopt . . . he got me into it, I hope he carries the tradition on.

If anyone is interested in the Club or its ideals and aims, the address is PO Box 79, Heidelberg 3084, Victoria.

Trevor C. Reid VK3NNR

## EDITOR'S NOTE:

From next month, we shall commence serialising parts of the CQDX Radio Group Handbook. It will make interesting reading to all novices and newcomers (VK3UV). ■

★ ★ ★

## MIDLAND ZONE FIELD DAY

To stimulate interest of the Novice element in the Zone all stations in the Field Day Contest 10/11 February 1979 with the exception of the 2 metre section were manned by novice operators using novice power, all of which was within the 30 watts PEP allowed. 80 metres proved to be the highest scoring section in the six hour period with contacts into VK1, 2, 3, 4, 5 and 7, and ZL1, 2, 3 and 4 zones from a



VK3NND watches VK3BIP and VK3AGM complete running repairs



Trevor Reid VK3NNR with son Robert, who has "worked" several Stateside amateurs under supervision. Two-and-a-half year old Robert has been given the handle "Big Bubba One" by some of the locals.



**Joan VK3NLO (nice lady operator)**

(Midland Zone photos by courtesy Geoff VK3NTN and printed by Harmonic of VK3NOV).

simple co-ax fed half wave dipole strung up a gum tree, I suppose being about 630 metres above sea level helped a bit.

The 2 metre boys had a very productive six hours both on 2 metres FM and SSB, and the assistance of several of the AOCF members in the zone with their knowledge of antennas and how to get them into the air quickly was fully appreciated by all novice operators.

This was a very good exercise for our novice operators and next year we hope to give other zones and clubs a run for their money. Gallons of coffee were consumed, but there was a singular lack of

807s. The journey down the Mount was very enjoyable with the 10 metre mobiles taking full advantage of the propagation at 1.00 a.m. on Sunday morning, with running commentaries of the skill and otherwise of the drivers who had not been up to one of the highest points in our Zone. Amateur radio is a hobby much enjoyed by our novices in the zone and we look forward to advancing in the skills required for that "full ticket", field days take you a long way in giving you the incentive to study and up-grade your licence.



**L. to R.: Murray VK3AMP and Norm VK3BNU on 2 Mx FM with George VK3ZZI solo on 2 Mx SSB. Don L31093 and his children in background.**

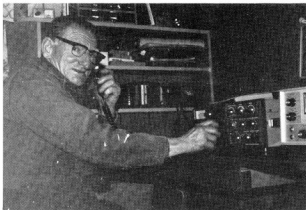
**BELOW: Murray VK3NOV, Zone Secretary on 10 Mx SSB.**



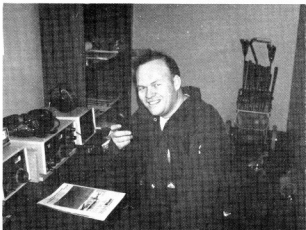
**VK3ATO/P Mount Alexander, near Harcourt, the voice of the Midland Zone, WIA, Victorian Division.**



## AROUND THE NOVICE SHACKS



Stan Tayler VK3NGN is one of the more active members of the Western Suburbs Radio Club in Melbourne. Stan, licensed since 1977, operates either his TS-820 modified or an FTDX400 modified into a three element tri-band Yagi, and on 80 metres uses a mobile whip mounted above his superbly constructed shack. Stan recently was voted Secretary of the club for the second consecutive term, an indication of the excellent job he does.



Formerly a VK6 novice, Ward Long is now VK3NAJ and has a very impressive and extremely operational shack, complete with a recently installed tower and TH6 tri-band beam. Ward is also active in the mobile with an FT7 and helical whip. And as you can see by the photograph, Ward plays a mean golf round as well as having a mean signal on HF!!

# THE ITU WARC SEMINAR— SYDNEY

The MLC Centre is a tall octagonal building in the heart of Sydney, Australia. On the 50th level spectacular views of the Harbour Bridge, the Heads and even in the distance Botany Bay can be seen from every window.

It was in this magnificent setting that the third of the ITU Regional Seminars was held, the others being held in Panama and Nairobi. 170 people took part from 37 countries and organizations. The Seminar was held on the 29th March to the 10th April, 1979, and was opened by the Australian Minister for Posts and Telecommunications, Mr. A. Staley.

The main purpose of the Seminar was to familiarize the many countries who will be attending their first Radio Conference, the World Administrative Radio Conference 1979, with the requirements for revising and updating the Radio Regulations. The Seminar also discussed topics of interest to countries in the Region, including communication problems associated with island countries and the use of high frequency radio for domestic communication.

On Saturday, the 31st March, the Wireless Institute of Australia, for itself and for the International Amateur Radio Union, hosted a reception in honour of participants on the 50th level of the MLC Centre.

Amongst guests were the Secretary-General of the ITU, Mr. Milli, and Mr. R. E. Butler, the Deputy Secretary-General.

In an adjoining area a continuous

videotape showing Amateur activities and relating those activities to the definition of the Amateur Service in the Radio Regulations was shown and many of the guests took time to watch this 5½ minute segment. Booklets from IARU Region 2, with an insert giving names of IARU Region 3 member societies, describing the Amateur Service, were available and very many of the delegates accepted these booklets.

An IARU receiver was on show on a corner table and attracted considerable interest. Delegates from many countries,

particularly from developing countries, were very interested in this example of a low cost receiver, capable of receiving SSB and CW, that could be simply assembled.

For the small number of prominent Australian Amateurs who acted as host during this reception it was a wonderful opportunity to meet those involved in frequency management from so many countries and, in many cases, to answer their questions about Amateur Radio.

Michael J. Owen VK3KI.



WIA Federal Vice President, Peter Wolfenden VK3ZPA shows the IARU receiver to a delegate from Sri Lanka.



Federal President of the WIA, David Wardlaw VK3ADW, with ITU Secretary General, Mr. Milli and WIA IARU Liaison Officer, Michael Owen VK3KI.



At the Seminar — l. to r.: Mr. Sul Hongliang, Michael Owen VK3KI, David Wardlaw VK3ADW, Mr. Nie Banggno, Mr. Zhao Xintong, Mr. Ding Yixing and Mr. Liang Shi — the delegates from the Peoples Republic of China together with the Australian Amateur delegates.

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JIM BAIL VK3ABA

Agents in all States and A.C.T.



# New shipment of the superb TS-520S just arrived in Australia.

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TS-820S series  
If you require a more progressive HF Digital Transceiver then move up to the functionally engineered TS-820S Pacesetter rig.



Due to production delays overseas, the TS-120S and the TS-180S Transceivers previously advertised will not be available until the end of June.

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# VK/ZL/OCEANIA DX CONTEST — 1979

The WIA and NZART, the national amateur radio associations in Australia and New Zealand, invite world-wide participation in this year's VK/ZL/Oceania DX contest.

## WHEN

Phone — 24 hours from 1000 GMT, Saturday, 6th October, to 1000 GMT, Sunday, 7th October, 1979.

CW — 24 hours from 1000 GMT, Saturday, 13th October, to 1000 GMT, Sunday, 14th October, 1979.

## RULES

1. The sections in the contest are:—

- (a) transmitting phone, 24 hour period,
- (b) transmitting CW, 24 hour period,
- (c) transmitting phone, 8 hour period VK/ZL only,
- (d) transmitting CW, 8 hour period for VK/ZL only.

2. All amateur bands may be used, but no crossband operation is permitted. NOTE: VK/ZL stations, irrespective of their location, DO NOT contact each other for contest purposes EXCEPT on 80 and 160 metres on which bands contacts between VK and ZL stations are encouraged.

3. Only one contact per band is permitted with any one station for scoring purposes.

4. Only one licensed amateur is permitted to operate any one station under the station's call sign. Should two or more operate any particular station, each will be considered a competitor and must submit a separate log under his own call sign. This is not applicable to overseas competitors operating club stations.

## 5. CYPHERS

A serial number of five or six figures will be made up of the RS (phone) or RST (CW) report plus three figures, beginning with 001, increasing in value by one for each successive contact.

## 6. 8 HOUR SECTION (FOR VK AND ZL ONLY)

Operation must be continuous and a 24 hour entrant cannot enter this section.

## 7. SCORING

- (a) For Oceania stations other than VK/ZL  
2 points for each contact on a specific band with VK/ZL, and 1 point for each contact with the rest of the world.
- (b) For rest of the world other than VK/ZL  
2 points for each contact on a specific band with VK/ZL, and 1 point for each contact with Oceania stations other than VK/ZL.
- (c) For VK/ZL stations  
1 point per contact, multiplied by the prefixes worked on that band. NOTE: W1, K1, WA1, A1, N1

(although in same call area) are different prefixes and count as multipliers; W6AA/1 is same as above and counts as W1 and not W6; JK1AA/5 will become the common prefix for the "5" area, namely JA5.

## (d) 80 metre section

For contacts between VK and ZL, each VK and ZL call area will be considered a "scoring area", with each different call area counting as a multiplier.

## (e) 160 metre section

As for 80 metres, plus contacts for scoring permissible between VK/ZL, ZL/ZL.

## 8. LOGS

(a) Logs to show, in order — date, time in GMT, call sign of station worked, band, serial number sent and received. Separate log for each band required.

Summary sheet — to show call sign, name and address, and each band, QSO points multiplied by VK/ZL call areas worked.

All band score will be total QSO points for all bands multiplied by total VK/ZL call areas worked on all bands.

(b) VK/ZL stations — as for overseas stations and the summary sheets to show call sign, name and address, and each band, QSO points multiplied by prefix worked on that band. All band score will be total of signed declarations that all rules and regulations have been observed also required.

## IMPORTANT NOTE:

Should a VK or ZL entrant so desire, submission of a summary sheet signed by at least two other operators, who need not have been in the contest, will be accepted by the contest manager, who reserves the right to call for the log should he so desire.

## AWARDS

### World wide, except VK/ZL

- (a) Mounted medallion to top world scorer.
- (b) Bronze medal to top scorer in each major area of contest activity.
- (c) Top scorers in each country (call area WJJ) will receive a certificate. Depending on activity, other awards may be made.

### VK and ZL stations

- (a) Mounted medallion to top scorer in VK and in ZL (two medallions).
- (b) Bronze medal for top scorer of each band for VK/ZL (six medals).
- (c) Top scorers in each call area of VK and ZL.

(d) Top scorers in VK and ZL on each band.

## ENTRIES

Should be posted to:—

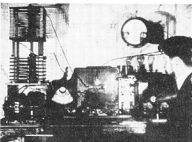
WIA,  
GPO Box N1002,  
Perth, West Australia 6001,  
or  
VK6NE-WIA VK/ZL Contest Manager,  
388 Huntriss Road,  
Woodlands, West Australia 6018,  
to arrive on or before 31st January, 1980.  
Results may be obtained by enclosing 1 IRC with your log.—VK6NE. ■

## HISTORICAL FILM

At this year's Federal Convention David Wardlaw VK3ADW, the Federal President, presented a copy of an historical wireless telegraphy film to the Institute.

The film, of French origin, does not deal directly with Amateur Radio, however, because of its age, it portrays wireless installations not unlike many amateur stations of the early days.

Originally, the film was on 28 mm (not 35 mm), a relatively rare film gauge which was used for early home movies and by educational institutes.



"The sparks fly as the operator keys" — a frame from the film.

The copy of the film presented to the Institute was photographically reduced from 28 mm to 16 mm by Peter Lord VK3NPL at Victorian Film Laboratories using the "Wetgate" technique. This provides enhancement of the image by reducing the effects of scratches on the original.

Both "old-timers" and newcomers alike will find interest in this new acquisition which will be available via the Institute Videotape Co-ordinator, John Ingham VK5KG. ■

## TRIAL AOCP EXAM

TRIAL AOCP EXAM — IN JULY, MULTIPLE CHOICE TYPE, CLUBS OR DIVISIONS. CONTACT ROY HARTKOPF VK3AOH, FOR DETAILS.

# WARC 1979 — WHY?

P. D. Williams VK3IZ  
R. J. Kelly VK3NT  
C/- Vicom

The basic appeal of the Amateur Service has probably been impaired by changes in allocation over the years. Congestion in some parts of the world and a confirmed opposition to amateur activity in other parts have contributed to decreased operations and no doubt, some technical progress.

Although there has been growth and innovation especially in Australia, it is apparent that further reductions or even small changes in a negative direction will lead to a loss of many of the vital functions performed by the amateur service.

Of course, an increase in the allocations will be accepted in the spirit in which it is given! Hopefully, they will be wisely used to enhance the status of the amateur service. We, at Vicom believe that the amateur service has, as a base for its continued existence, the following arguments:

## 1. TECHNOLOGICAL DEVELOPMENT

Amateur radio can provide a source of self training in electronic skills, limited only by the effort the individual is prepared to put into it. Despite proliferation of "black boxes", an understanding of the techniques used, plus a desire to implement these principles in experimentation must stimulate the development of communications technology.

## 2. ECONOMIC CONTRIBUTION

Although not particularly appropriate in the Australian context, the indirect extension of amateur radio and related equipment into professional consumer and government markets must advance to play a role in raising the general level of technological knowledge.

## 3. THE NATIONAL IMAGE

Especially on DX bands, the image of the country is portrayed through personal and unrehearsed dialogue. Unlike international broadcasts which consist of political discussions and news with strong editorial undertones, the amateur service can project abroad a strong and creditable image of the nation.

In supporting the WIA and Region III IARU, we at Vicom believe that the Amateur Radio Service clearly emerges as a national and international resource whose value to any nation is great. Any attempt to prune this resource must constitute a serious loss. We welcome and support the activities of the WIA and IARU Region III. We hope all amateurs share this philosophy. ■

# AMATEUR SATELLITES

Bob Arnold VK3ZBB

## OSCAR 7

Despite serious battery failure the satellite is still operating and can be heard in modes A and B. Operation through these modes are possible on occasions, but please use restricted power. I am reinstating the predictions.

## OSCAR 8

This satellite is now running four minutes earlier than the predictions given in previous editions. The predictions in this issue are appropriately corrected.

On some occasions A08 has been

switched to mode J on Tuesday and Thursday in addition to the scheduled Wednesday, Saturday and Sunday. On some days both modes A and J are operable.

## RUSSIAN SERIES

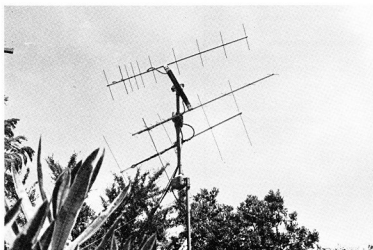
Both RS1 and RS2 appear to be in difficulty due to battery failure or damage to solar cells. RS1 telemetry is very weak. It is doubtful if operation will be possible through either of these satellites. Unfortunately reliable detailed information is extremely difficult to obtain.

## VK4 DIVISION

Peter VK4PJ is now including a segment on amateur satellites in the weekly VK4 Divisional broadcast. I hope this idea will be considered in other Divisions where it is not already a part of the broadcast. ■

## ORBIT PREDICTIONS — JULY 1979

OSCAR 7				OSCAR 8				RUSSIAN RS1			
Orbit No.	Eqx. GMT	Eqx. °W		Orbit No.	Eqx. GMT	Eqx. °W		Orbit No.	Eqx. GMT	Eqx. °W	
1	21151	0021	69	6729	0041	56		2965	0155	275	
2	21164	0115	83	6742	0046	57		2976	0000	248	
3	21176	0015	68	6756	0051	59		2988	0005	251	
4	21189	0109	81	6770	0057	60		3000	0009	254	
5	21201	0009	66	6784	0102	61		3012	0014	257	
6	21214	0103	80	6798	0107	63		3024	0019	259	
7	21226	0002	64	6812	0112	64		3036	0023	262	
8	21239	0056	78	6826	0117	65		3048	0028	265	
9	21252	0151	92	6840	0122	67		3060	0033	267	
10	21264	0050	76	6854	0128	68		3072	0037	270	
11	21277	0144	90	6868	0133	69		3084	0042	273	
12	21289	0044	75	6882	0138	70		3096	0047	276	
13	21302	0138	88	6895	0000	45		3108	0052	278	
14	21314	0037	74	6909	0005	47		3120	0056	281	
15	21327	0132	87	6923	0010	49		3132	0101	284	
16	21339	0031	72	6937	0015	50		3144	0106	286	
17	21352	0125	85	6951	0021	51		3156	0110	289	
18	21364	0024	70	6965	0026	52		3168	0115	292	
19	21377	0119	84	6979	0031	54		3180	0120	295	
20	21389	0018	69	6993	0036	55		3192	0125	297	
21	21402	0112	82	7007	0041	56		3204	0129	300	
22	21414	0012	67	7021	0046	58		3216	0134	303	
23	21427	0106	81	7035	0052	59		3228	0139	306	
24	21439	0005	66	7049	0057	60		3240	0143	309	
25	21452	0100	79	7063	0102	62		3252	0148	311	
26	21465	0154	93	7077	0107	63		3264	0153	314	
27	21477	0053	78	7091	0112	64		3276	0158	316	
28	21490	0147	91	7105	0117	66		3287	0002	289	
29	21502	0047	78	7119	0123	67		3299	0007	292	
30	21515	0141	90	7133	0128	68		3311	0011	294	
31	21527	0040	75	7147	0133	70		3323	0016	297	

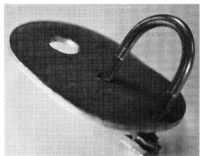


Oscar antennae at VK3ZBB — Bob Arnold.

## AROUND THE TRADE

### SKI-BAR BRACKET

Something new on the market from Barry Chivers, 19 Naami Court, Bayswater, Vic. 3153, is the J & D cadmium plated ski-bar mounting bracket. Just the thing for Amateur or CB whips, and it saves one of those little "problems" if you are



trying to make one up yourself from the junk box.

They are available for \$2.00 plus 50c postage.

Enquiries to Barry at the above address or phone (03) 729 3906 (A.H.).

### NEW MFJ ANTENNA NOISE BRIDGE

GFS Electronic Imports, Australian agents for MFJ Enterprises, Mississippi, USA, have just announced the release of the model MFJ-202 antenna noise bridge.

Housed in a compact 5 cm x 7.5 cm x 10.2 cm case it offers the user the ability to read pure resistance of the unknown source over a range of 0 to 250 ohms and both inductive and capacitive reactance with a  $\pm 150$  pF capacitor. Frequency range is 1 to 100 MHz.



Powered from an internal 9 volt battery the MFJ-202 makes solving antenna problems a breeze. For example: Resonant frequency on the antenna can be determined, electrical half wave length of a transmission line calculated, input and output impedance of an RF amplifier may be found, baluns can be measured for impedance, velocity of transmission lines can be calculated.

With the addition of a Range expanding resistor the MFJ-202 may be used to make resistive measurements up to 5,000 ohms and inductive capacitive reactance measurement up to 2,200 ohms.

Price of the MFJ-202 is \$78. For more information contact GFS Electronic Imports, 15 McKeon Road, Mitcham, Vic. 3132. Ph. (03) 873 3838.

### BWD APPOINTS SA DISTRIBUTOR

BWD Electronics Pty. Ltd., the manufacturer in Australia of precision instruments, announces that Protronics Pty. Ltd. is their sole distributor in South Australia and the Northern Territory.

The announcement was made during a recent visit to BWD Electronics by Bob Crabbe, Managing Director of Protronics. Mr. Crabbe, on the left of



the photograph, is seen with Bruce Owen, Managing Director, and Ron West, Marketing Manager, for BWD Electronics at the signing of the agreement. Ron West said Protronics's five sales engineers and comprehensive service facilities would make a significant contribution to the already successful distribution of BWD products in Australia and would further strengthen local customer sales and service facilities.

A larger order has been placed by Protronics for items from the wide range of BWD products, in particular for the Powerscope, Oscilloscopes, Signal and Waveform Generators, Power Supplies and "Mini-Lab" (the teacher's friend).

Protronics address is 174-180 Wright Street, Adelaide, SA 5000. Phone (08) 212 3111.

## VICOM SUPPORTS WARC 1979

As a contribution to the effort in preparing and maintaining a presence at the coming World Administrative Radio Conference, VICOM have donated \$1,000 towards the Wireless Institute's funding for the project.

A spokesman for VICOM said that the Conference will have a profound effect on the long-term interests of both the Amateur fraternity and the viability of the commercial interests throughout the world.

If you are reading  
this issue but are not  
a member of the WIA  
and if you would like  
to receive AR every month  
for your own personal  
use and future record —

Would you like  
to join the WIA now?

Please write to the

WIA,  
P.O. Box 150,  
Toorak, Vic. 3142  
for details of how to join.



Russell Kelly VK3NT (Viccom Commercial Director) signs a cheque for presentation to David Wardlaw VK3ADW, WIA Federal President. Peter Williams VK3IZ (Viccom Technical Director) looks on.

Eric Jamieson,  
VK5LP

VKSLP

auto CW ident, running 300 mW (!) to a 6 element beam at 20 ft. The operator has no receiving equipment. See general notes for further information on this one.

Advice has just come to hand that VK6RTT, the Carnarvon beacon on 52.800, has been re-activated and will be running continuously. That's good news.

†† PYIRO is a new beacon, news of which comes via HL9W1.

If you scan the full list you will see a number of new beacons appearing under the attended operation category, namely HLSTG, K6FV, ZS6LN, JD1YAA, all of which could be very useful.

## SIX METRES

There is just so much going on at the moment on six it is difficult to know where to start and then when to stop! The distances being worked by individual stations are being extended all the time, currently it appears signals have been worked further than they should be. I think you can't go much further than that beyond that it is difficult to say whether or not you were receiving a station the other way round! I think the easiest way to give you the information is to start with what David GKSKK has tabulated and that can be added to as required. No matter what I include at the end of the column, it is a story, so much of it has been going on that hasn't really been said or it is heard as hearsay, which if I print it can be accused of lacking credibility, so if I have done something which should have been noted and you don't rate a mention, it is because you or anyone else hasn't told me, I get some of the air, but I keep it in the column, I think I should have kept the wolf from the door, at times I am not at peace with the XYL, who is very understanding to say the least! And I still find time to shower!

From Davis' VK5KKT: "24-3 to 27-3 good. JA conditions to all VK call areas a 1, 9, 28-5 HL7GT to VK3OT at 2425Z, marginal CW contact. Then on SSB to VK5KK, VK5JZJ, VK5ZMO, VK5SV, VK5AVG, VK5LP, VK4QD and to VK2BYX three times, signals 5 x 5 to 5 x 9 + on peaks. Also HL9WJ worked VK5KK 5 x 9 at 0310Z. Probably the first widely available HL opening to the lower States and then following peak, a 2nd opening to VK2 repeated 5 x 9 and over again. Most openings to VK2 5 x 9, 5 and 8, and/or several to VK3 and one excellent opening to VK7 on 3-4, and VK1 same day. HL7GT worked a total of 7½ (7) VK7s, thus he has now qualified for WAS in VK. The only explanation for the sudden upsurge in HL to VK contacts is perhaps the recent interest shown by both HL8 stations in VK. Conditions have certainly been good enough before."

"Also KG6 has become more widely available to VK1, 2, 3, 4, 5, 6 and 8, mainly with Joe KG6DX, but also KG6JKS, KG6JIP and KG6JDX. Openings fall into various time slots from 2245Z to 1500Z in VK5 at least. Some early morning openings have great flutter. KG6DX runs FT101 to FTV 650B to Tempo 6N2 with about 500 watts to a wide spaced 6 element beam.

"3303-HL9R and HL9TG to 519 314 at 0240Z to most areas. Also JAs for 4 hours. 3 x 5 x 9 to HL9 plus JAs, KG6 and KH6. From 0500Z KH6IAAA to VK4, 5 and 8. Al worked to VK35, so what an opening. Signals to 5 x 9+ on SSB. KH6NS from 1100Z to VK35ZMO, VK5KK and VK5RO plus VK455. The latter is a very good signal. VK555 seems to be popular. I don't think anyone (nearly) worries about this kind of usage of 6501 1/4! April Fool's Day didn't yield anything before midday. During daytime KG6 and HL9 worked again from 519. Large light coming in JA from 1000 to 1300Z. Began open VK455. 519 314 times 1000 to 1300 being the borderline for 5 x 9 signals! At least to VK5 anyway. 24: Another JA opening from 0000 to 0600Z continuous to most States with signals to 5 x 9, 3 x 4. Bars open to 519 314, HL9, KG6 and HL9. Also notable contact VK30T to KH6NS. Claimed to be the first VK3-KH6 contact, but KH6 had worked to VK3 earlier in the year. Also that night some excellent backscatter contacts between VK2, VK5 and VK3. Also VK5KK to VKGB in Darwin, distance 1600 miles.

"On GMT day 2-4 some interesting easterly bearing DX. At 2320Z VK3OT to XE1GE peaking 579 on CW. At 2330Z also VK5KK to XE1GE 589

CW and 5 x 7 SSB. Distance 8750 miles to Guernacma, which is 50 miles south of Mexico City. Geoff XE1GE, runs a Heath HH30 to 629K final. On receive he uses a crystal controlled counterpoise antenna mounted 10 feet above the ground. The last station heard was XE1FU to VK3ALZ in 1959, which until now was still the VK distance record on six metres. XE1GE also heard by VK2BYX at least, and I think by VK2BQ. More night time JA contacts were made by VK5 etc., from the HLRGT 5 x 9 at 1035Z GMT day after another excellent Central American contact, this time between VK4RO and KZSNW at 2330Z. KZSNW, Philadelphia, Panama, had and has been heard before the previous month by VK8GB. At 1000 miles, so things really stretching out! Same day to VK lower States, KBHEOI 0128 to 0302Z, HLRTD D100 to 0126Z, and KG6DX from 0000 to 0130Z. A7, at least, from 0100Z. KG6DX from 0600Z to 0700Z at least. Later, from 1100Z, the first contacts were worked on FM on 52.150 and above from VK5KK. Also small KH6 opening on 5-4 to VK3, 4, 5, etc. late night from 1300Z. Also VK8VU worked on backscatter on 6-4 at 0030Z. 7-4: HLRTD D100 to 0130Z, and KG6DX from 0100Z to 1350 to 1430Z with usual 5 x 9 signals.

"Back towards the east on 8-4 VK4RO stretched that record to around the 9300 mark again when he worked W4YWS and WB4GHA on SSB and CW between 0145 and 0205Z. W4YWS in Orlando, Florida, was heard first and it was also understood Barry VK3ZBZ was one of the above stations. The station proving to be the centre of a lot of DX activity on six with also T12NA being heard by VK4RO on 10-4 around 2230Z. And not forgetting 7-4, where W6XJ worked a total of 26 VK stations!! But from VK1, 2, 3 and 4 VK1FT worked Gary W6XJ with him on 10-4 and 11-4. The 12-4 group was in contact using 400 watts at that but the fifth call area totally missed out, like 12-3 again! Must be that borderline again or someone scoops it all before it gets here! Signals to 5 x 9:1 and best W6-VK opening, probably because it occurred after 0100Z. Barry VK3ZBZ worked W6BNT San Diego through the DX lot. KHE from 0750 to 0810Z on VK73, VK5, KH6EQI peaked at 5 x 7 and KHE1AA from 0753Z to 0759Z a VK4RO on 5205Z for complete opening. Signals heard by VK3NM, VK3AUJ and VK5ZZZ, VK5ZBU and VK5KX. Also JG1UJ up again with signals heard on 8-4 or 0-4 on 050 559.8. The 12-4 group was worked by VK3AOR at 2256Z split frequency on CW on GMT day 9-4. Also 2306Z to VK5KK split 599 CW. XE1GE also heard by VK2BA, VK2BUD at least, and VK5LP. First signals from XE1GE at 2210 (and that's easy!) Closed 2330Z. Later that

"On 12-4-02 0620Z WD4YWS heard by VK5ZMO/KM5KKX on 50.103 ending at 0624Z. It was calling CQ. Then at 0404Z WANNV came through and was worked from 0442 to 0452Z. 5 x 9 on SSB to VK5AKH. Also heard by VK5ZMO and VK5ZBU. The band shut shortly after. (Shows you need to be prepared for signal openings.)

"On 12-4-02 0647Z, W4YWS heard by VK5ZMO on 52 MHz. W4YWS on 52 MHz at 0647Z. For next 10 minutes some meteor extended peaks from W4YWS but no consistent signals. WANNV, Carroll, is located near Port Richey, near Tampa, Florida, runs 60W, waits to 8 element KLM. W4YWS, Carroll, runs 100W, waits to 8 element KLM. Hearings plays W4YWS later. On 13-4 VPMT from VK2, 3 and 5 from 0030 to 0120Z. VK5KK to VK2, VPMT at 0427Z, 5 x 5 SSB. Distance 3000 miles. Also heard by VK5RO 0454Z and VK5ATN from 0102Z. Some unconfirmed reports of hearing from VK5ZMO and VK5ZBU. When they were in the VPI around 2200Z. VPMT located in Cornwall, Belize, formerly British Honduras. Station was a DXpedition and disbanded several days later. Operator Bob had 70 watts to a 3 element yagi on 50.103. Also heard by VK5ZMO on 50.103 on SSB. Also later to D130Z K6GEX on 50.103 with very fluttery signal. HL9TG testing to VK30T on 5 x 9 on 50.010 at 0400Z, although no signals to VK3. GMT day 13-4 K6GEX 5 x 9 + to VK2, 4 and 5, etc. Also anonymous backscatter between VK2, 3 and 5. Heard by VK5ZMO on 50.103. Heard by VK5ZMO. XE16G heard again from 2315 to 2320Z, 519 or 50.09 MHz. Later JA8s from 0200Z and VK4 via Es from 0245 to 0330Z. Also Z56LN copying on KHF601 5 x 6 from 0645 to 0731Z. More than a dozen reports on 52.010, being heard via ping-pong from 1114, in 0120Z. W4YWS on 52 MHz at 0647Z.

## AMATEUR RADIO BEACONS

Freq.	Call Sign	Location
50.001	WAMSH7 - San Diego	
50.004	PT1RO - Brazil †	
50.004	HLG9 - Seoul †	
50.023	WHSPR - San Jose	
50.025	6YSRC - Jamaica	
50.050	WA1ENX - Maine *	
50.050	K6FLV - California *	
50.050	ZS6LN - South Africa *	
50.075	HC3/A - Columbia *	
50.080	T12MA - Costa Rica †	
50.088	VE1SIX - New Brunswick	
50.091	WA6JRA - Los Angeles *	
50.092	W7KMA - Oregon *	
50.101	F08DQ - Tahiti *	
50.104	HB6EQI - Pearl Harbour	
50.110	YBUPJ - Saudi Arabia †	
50.110	K6GJDX - Guam *	
50.110	JD1YAA - Marshall Islands *	
50.110	KH0KH - Marshall Islands *	
50.144	ZS6LN - South Africa *	
50.500	5B4CY - Cyprus	
51.999	YBUPJ - New Caledonia	
52.000	JD1YAA - Marshall Islands †	
52.100	VK0CB - Casey Base *	
52.200	VK6RW - Darwin	
52.300	VK6RTV - Perth	
52.400	VK6RTU - Kalgoorlie	
52.400	VK7ONT - Launceston	
52.450	VK6WV - Wellington	
52.500	3D2AA - Fiji	
52.500	JZ1QY - Nagoya	
52.500	ZL2VHM - Palmerston North	
52.500	ZL2MHF - Mt. Clitme	
52.800	VK6RTU - Albany	
53.000	ZL2MHF - Palmerston †	
53.000	VK5VF - Mt. Lofy	
53.100	VK0MA - Mawson †	
144.010	VK2WV - Sydney	
144.040	VK4RTT - Mt. Mouballan	
144.475	VK1RTA - Canberra	
144.500	VK4RTT - Sydney	
144.500	VK3RTG - Vermont	
144.800	VK5VF - Mt. Lofy	
144.800	VK7RTX - Ulverstone	
145.000	VK6RTV - Perth	
145.100	ZL3VHF - Auckland	
145.150	ZL3VHF - Auckland	
145.200	ZL2VHF - Wellington	
145.250	ZL2VHF - Palmerston North	
145.300	ZL3VHF - Christchurch	
145.400	ZL4VHF - Dunedin	
432.400	VK4RBB - Brisbane	
432.400	VK3PXT - Millarast	
432.475	VK7RTV - Ulverstone	

\* Denotes these beacons operate on an attended basis, i.e. when the operator is in the shack, or available, and the frequencies may vary according to the whim of the operator or how accurately he sets the dial, e.g. FO8DR was heard by me on 26-4-70 on 50.105, not 50.101 as listed. However, these stations are useful and so are included. There may be some others which should also be noted thus; if you are sure please let me know.

\*\* This station appears to be a repeater, with an output of 50.075 and input of 50.125 FM. Probably more useful as an indicator for the USA

\*\*\* VKOMA has never or not been heard for a very long time. Operation is therefore doubtful. I will list it for another couple of months, if no one disagrees then it can be deleted.

† Two new beacons. VK0BC is operating from Casey Base in the Antarctic on 52.100 with

plus VK2. Later Es between VK5 and VK2 and VK4 from 1020 to 1100Z. And after everyone had gone to bed John VK5ZBU worked KG6DX for a good 30 minutes from 1400Z at 5 x 9+, and VK3AKN but not other contacts.

#### SIX METRES CONTINUES

"On 17-4 VK8VU worked W7LY and AA6S from 0355Z 5 x 9, also believe VK8GB worked also. Previously Graham had worked into W5. Band opened into VK4 twice with the usual early 2300Z time and repeating from 0200Z onwards. The later opening was better. This pattern repeats itself over the next few days. At 0610Z (J) VKHMK worked K6VU and K6FY on SSB and CW. Ken also heard K6MYC (Mike Stahl of KLM) on 50 MHz but no contact. During previous days JY8PV had been copied. Station side many times but unfortunately Ken is having troubles with equipment during the wet season. Pity manufacturers cannot make amateur gear to be usable in really humid climates. However, congratulations, Ken, and yet another country for the only permanent 6 metre operator on Y8. Back home JAs from 0945 to 1130Z on 17-4. On 18-4 not much activity on 6 m from here but you should have heard it on 2885 KHz. One VK3 was pointing the bone (literally) at a VK5 for running a keyer on 52.001 MHz. Later on JAs from 1142 to 1510Z and K6FY on 50 MHz. Ken also heard K6MYC (Okinawa) to VK5KK, VK5VAV, VK5Z2Z, VK5ZBU, VK5LPL and VK5RO to HLWVI. Times from 1130 to 1240Z. Also VK5KK to J865VM, Okinawa at 1205Z. KA6HF runs a barefoot T5600 and peaked to 59. Band also open between JA and VK2 and VK3 to 1200Z. From 1305Z VK8VU worked AA6H or MM was audible to VK5KK, VK5Z2Z and VK5RO, although barely readable most of the time. Frequency 52.032. Also VK6OX copied same station slightly stronger but also didn't make contact. ABKQ is on a Liberian oil tanker and was working JAs at 5 x 9 from the Java sea area. The tanker heading towards Japan. KG6DX worked 2885 KHz at 20-4. Not much hope VK working such a station with all those JAs so strong. 20-4: JAs (lower areas) 5 x 9++ from 0800 to 0900Z to VK2, 3, 5, etc.

"On 23-4 KH6EIQ from 2320 to 0310Z, peaking 59 and never disappearing for more than 5 minutes! From 0025Z KG6DX, VK2, 3, 5, etc., peaking 59. Around 0140Z KH6AIA to VK5KK, VK5ZBU and VK5SV, peaking 5 x 7. HL9TG 5 x 5 to VK5 and 5 around 0300Z. Also JAs from 0400Z to 5 x 9. Next day 24-4 KH6EIQ again from 2345Z to 59 until 0300Z. At 2352Z KH6NIS to VK5SV, VK5KK, VK3AQR, VK3OT, VK3JN, VK3ATN and VK3AKM. Signals 5 x 7 in K6Gide and averaging 3 to 4 in VK3. Also from 0000Z KG6DX worked VK2, 3, 4, etc., to 5 x 7/9 in VK5 and 5 x 4, 3, 4, 5 and 8.

#### MORE ON SIX METRES

David VK5KK continues: "More generally the DX so far this year has outstripped all predictions, at least those based on the 1957-59 period. For those able to pick patterns in DX there has certainly been quite a bit to follow: e.g. take the openings like the following . . . VK4 and VK8 to KZ5; VK3 and VK5 to VP1; XE1; VK4 and VK5 to V4; etc. to W5, etc. It is not coincidental that generally, took an earlier bearing. They almost all occurred between 1-4 and 14-4. XE1GE appeared to VK2, 3 and 5 many times in this period between 2200Z and 0000Z. However, the other contacts to W4, W5, KZ5 and VP1 all occurred between 0000Z and 0200Z. ZL VK6 has occurred as early as 1800Z and as late as 0000Z. It is not clear how many day cycles? The only VKs to W5 openings and probably the best W5 openings, occurred 12-3 and 7-4, 27 days apart! The W openings started in early March with afternoon openings and only after 18-4 did the same afternoon conditions return to VK4. By then the peak of conditions for the lower VKs had well been passed. Also VK6OX and VK6ZCC, and Perth stations to a lesser extent, have been copying KH6EIQ almost 6 days out of 7 from 1-4 to 20-4. Path is approximately equivalent to VK2-W5, yet seems to be slightly more consistent despite lack of contacts. Most noted calls during W openings are . . . VK5KK, VK1FT, VK2A5Z, VK2B0U, VK8YX, VK5Z2Z, VK4QO, VK4HD, VK4PU, VK4ZBJ, etc. And finally what about the flutter on KG6 signals from 2200 to 0130Z? Any

answer on this one is a very consistent and regardless of signal strength, i.e. can be S1 or S9. Has it got anything to do with the fact that Guam is directly below the Magnetic Equator? In fact, why does it open so often regardless of general conditions? It was not there throughout May or even later! At present KG6 is more consistent and predictable than JA to VK3 and VK5. Although with high sunspot counts the TE does deteriorate, that keeps the JAs quiet here at least! By the way, the flutter has a fast rate like 20 to 40 Hz, although not as bad as auroral (for those lucky enough to have heard it). It is not, it is quite noticeable and a lot faster than TE P2 flutter. Is it a morning "hangover" form associated with the previous night's TEP? Some feedback from VK4 and VK8 stations on the intensity of TEP the night before may help. Some of the above may be a bit doubtful but is presented to stir some effort towards this unusual little type of opening.

#### OVERSEAS AND OTHER DX WE MISS

"Amongst other outstanding overseas contacts comes Z56 to KH6. On 16-4 from 0645 to 0841Z Z56LN worked KH6HI, KH6NS, KH6AIA and KH6JAI. Greatest distance being between KH6AIA and Z56LN, about 11,900 miles, is not far short of the previous record of 10,994 miles. The record is now about 9980 miles, although the VK5 could scoop the pool by working to Y8P, Bermuda. Quite possible, as it is only 1200 miles out from W4. Bearing from KH6 was 240-T, which is down the way. In fact, most times KH6 tried to Z56, the VK8 beacon was audible in KH6 and vice versa. Also KH6EIQ was heard on 50 MHz. Heard KH6EIQ, VK6GB heard Z56LN on 50 MHz. Over 2 MHz difference doesn't help at these times! But is VK the stopper for such contacts, or does it fly over us, say, 100 miles up?

"30ZCM has been worked from W4, W5 and W6. ZK1AA is now active with a Clegg (Venus) and can operate on 50, 61 or 52 MHz. He has worked KH6EIQ, KH6JAI and KH6AIA (Pitcairn Is.) and CGEA (Easter Is.) again activated on 6 metres although a difficult path for VK. Some state news (or it will be), 9N1BMK (actually JABBMK), Nepal, will be active on 50.110 and 50.045 from 2-5 to 6-5. However, he has a licence to operate for the next 12 months so he may be working 50.110 and 50.045. Also Y8BX has obtained permission to work 50.105 and 52.05 from 28-4 to 6-5. Only information to be exchanged are RST reports, one of the provisos because 6 metres is not allocated to Indonesian operators. Permission was obtained on the understanding it is simply a propagation test. QST to JA1UT. Watch out for MK6 repeating in Columbia. Often heard in USA and provides indicator for South American openings to US. Input is 50.125 and output 50.075 MHz. Mode FM. And locally, who is it that works JAs on SSTV on 52.015 MHz? Absolutely no complaints about the frequency but I shudder at a SSTV monitor! What about RTTY too? Wonder what happens to the picture when TEP 2 flutter sets in?"

Again many thanks, David, for the complete coverage you have given of the 6 metre scene. Does not leave a lot for me to fill in! The reason such good coverage of activity from VK5 is given is fairly obvious, firstly we live here, but, more importantly, David is the only one who takes the time to write to me with such complete information, and he doesn't have to be prodded either, and that's worth a lot. Being a dedicated VHF operator and with a great interest in propagation, it is inevitable he will have a lot of information at his fingertips, but most will agree his notes are pretty well an embracing and shows what is happening in the international scene.

In writing the above paragraph I would not want any readers to feel the letters they send to me are not acceptable, every bit of information I receive is studied and used where possible, and I am grateful for the continuing information which comes into my office, but we are sadly lacking information from VK4 and VK7. Some comes from Tony VK6BV, convincing that and, occasionally, from news from VK4 and VK7, nothing these days from VK8, so that's the very sorry story for us.

#### OTHER SIX METRE NEWS

ZL seems to enjoy contacts with areas not heard by VK very often. I refer to working HI1 Dominican

Republic early April, and at that time 6 W States . . . Z56LN usually runs his attended beacon on 50.104 but during the KH6 contacts was using 50.050 . . . Z56LR usually transmits on 50.100 . . . On 24-4 JAs VK8VU, VK8VAV, VK8VAV, VK8VAV heard the VE15XB beacon on 50.088 at 0857Z for a short period, not strong . . . 28-4 F08DR beacon to 59 on 50.105 at 2244Z lasting until 2300Z . . . Steve VK3OT going to Y8 from 12-5 until late June, will be operating as Y8OT on 6 metres, plus 10 and 15 metres we believe . . . On 26-4 VK6GB worked 2885 KHz. Heard KH6EIQ on 1225Z 5 x 9 and again on 28-4. Advised also there is another H44 station operating. VK6GB has now worked 14 countries on six metres . . . On 25-4 KH6NE heard VK6BF for 7 1/2 hours . . . 28-4: Commercial CW station signing DJZ 50.175 at 2347Z to 55 to 9, may be in Philippines . . . same day HL9TG beacon on 50.010 045Z for 10 minutes. 28-4: VK5KK and VK5LP hearing WKXJ 50.020 0030 to 0200Z 51-2, VK5KK tried for a long time to work split from 52.020 without success, liaising on 2885 to Gary, once again the 2 MHz disadvantage shows up well . . . WBKJ worked JOE VK7JG on 22-4 at 5 x 9.

26-4-79: I am sure this date needs special mention. It was probably one of the outstanding days for the month of April equinox; here are a few of the things which happened as we saw them from VK5. Firstly, F08DR heard 2312Z at S3, later to 59. 2313Z very strong backscatter signals to VK3OT and VK3AQR. 2326Z worked KG6DX 5 x 5. 2332Z worked VK6GF Alpha Springs 5 x 5. 2335Z worked VK2H2 5 x 7. 0002Z worked KH6AIA 5 x 5. 0012Z worked VK2B0 25 JAs. They had to go to the salt mines. But those still at home worked plenty of JAs, starting with JA7. HL9TG worked by John VK5ZBU at 0447Z on backscatter, whilst HL9TG was beaming over China! Still beaming China, Gary worked VK2, 3, 4, 5, 6, 7 and 8. KA6EID, KG6EJ, KG6JFK, etc. During 26-4 VK2BQJ worked 2885 KHz. Heard KH6EIQ at various times all the relevant beacons of the Pacific area were audible. JA1RUJ worked ZK1AA and F08DR at 2300Z 5 x 9+++, also DU1DM on 50.105, plus VK4, 5, 6 and 8, and VK9KK on 50.030! On that day Kazu heard 15 countries on 6 metres! Still continuing the saga of 28-4 as mentioned above, the VK5 heard VK6VU working W44DX, JD1YAA Marcus is, also heard F08DR and Y8P, heard W stations but unable to contact. KH6EIQ very strong. Later at night from 1300Z many strong JAs were worked in VK5 and other areas, call areas contacted JA1, 2, 3, 4, 5 and 8, plus VK4, 5 and 8. Last station worked at 1425Z. So it was a great day, no doubt many other VK areas did just as well, so the day would help to put the VK position even more firmly on the map, though again our 2 MHz discrepancy from the remainder of the workable areas preclude the contacts with the more elusive stations which are only there for a few minutes. If we could only be permitted to go down and call them on their frequency with a view to either working split frequency or requesting them to look on 52 MHz, or even having a brief exchange of RST reports on 50 MHz would help. Surely no harm could be done if we were granted this concession.

#### NEWS FROM VK5

Tony VK6BV passes on information re activity in the West, saying the first of all that Es saw activity to the eastern States was rather poor this year. First JA openings occurred 18-2, then 10-3, 30-3 saw the first of the good openings to Japan with JA1, 2, 3, 4, 7, 9 and 0 from 0450 to 0532Z, 26 stations worked. 3-3, 17 JAs worked. 1-4 to JA1, 2, 7, 8, 9 and 0, plus JAs working from 10-3 to 14-3. Stations. JAs continued on 2-4, 5-4, plus HL9TG. On 6-4 KG6DX on 52.020 at 0108Z for what was believed to be the first time to south of Western Australia. 7-4 KG6DX opened on 50.110 at 0145Z S7. Also heard in Busseton at S5 by VK6AM and others. 8-4: VK8VU, VK8ZKO, VK8VU, VK6KZ, etc. Heard KH6EIQ on 1225Z 5 x 9. Heard about 0200Z from Perth, signals to 55. KH6EIQ beacon also 59 at same time. JAs 9-4, 11-4, 12-4 also, plus KG6DX, KG6JGS for 2 hours around 0200Z. 13-4 KH6EIQ beacon, plus JA.

On 14-4 Don VK6MH heard and recorded the KH6 beacon from 0155 to 0233Z, peaking 59. Unable to get KH6 stations on via 2885 net. WKXJ suggested checking the tape, and another CW station

was noted under the beacon, being W6KJ running his keyer 1 kHz removed! This the first recorded copy of a W station on six metres in VK6. Russian station believed heard on 52.000 0215 testing at 59.1. On 15-4 K6B beacon again into Perth 0133 to 0140Z, and during this time Vary VK6WD heard and taped W6KJ on 50.005 at 519. Also recorded by Tony VK6BV in Northern 2 minutes earlier at 0133Z. Same time open to K6G . . . Well at least we know the VK6 boys are sharing in the six metre spoils.

#### NEWS FROM VK3

GIL VK3AJU sends two letters with a coverage of activity in the Box Hill suburban area of Melbourne. He commends the action of Gary W6KJ in co-ordinating the 28885 MHz net for six metre operators, which has proved to be immensely useful for liaison for six metre openings, and no doubt has done much to overcome the problems associated with our 2 MHz difference when the US stations hear the VK and ZL TV stations. Such liaison first helped to ensure the success of the contacts between W and VK3 on 12-3, when W6KJ, N6CT, N6AZ, W6BNMT and AA6S were contacted by VK3OT, VK3AKK, VK3AKK, VK3AKQ, VK3AJU, VK3AJU, VK3AKZ and others. Same day openings to JA, and later at night to KG6D.

On 18-3 via 28885 were reports of the W6 opening to VK2, VK9 and ZL, but nothing heard in Melbourne. W6KJ also worked VK9NI at 2225Z, ZL1B10 on Kermadec Is., and several other ZL stations. Four countries on six in a short space of time. Other Melbourne openings to JA were on 29-3, 31-3, 31-3. On 30-3 KH6, JA and HLW1. 8-4 worked KH5IAA at 0903Z. 10-4 JA on 8-4 at 0905Z whilst tuning on 50 MHz GIL heard an FM signal on 50.125, which could have been the Columbian repeater HK3J4. Beam heading was right.

Gil reports it is pretty hard going in Melbourne due to the rubbish from Ch. 0, but a vertically polarized antenna of 4 elements has been giving him some success, and hopefully the removal of Ch. 0 later will see VK3 being heard much more regularly. Thanks for writing, Gil.

#### FROM JAPAN

Junji JAZT210 writes to say his 6 metre equipment consists of FT101, FR101 and FTV500, using two 6145 valves to give about 100 watts input, 7 element yagi up 17m. Currently he is trying a T5600, home brew linear for 100 watts input. He is Editor of 6 metres column in "The Mobile Ham", a monthly magazine. He is 24 years of age, and he lives in Hamamatsu City, with a population of over half a million people! Included with the letter were details of the Indonesian DXpedition with the call sign YB0X for 28-4 to 8-6, any reports of which will be given next month. JAJUT will handle the QSL info, address being Yoshio Hayashi, 4-20-2 Nishigotanda, Shinagawa, Tokyo, 141, Japan.

#### EME HAPPENINGS

For a change of subject, Ray VK3ATN advises during the April EME session and using his 16 foot dish he heard VET6BG, ZE5JJ, a JA6, JAT1 and two W stations which were not identified. At the same time Chris VK5MC using his 20 foot dish contacted VET6BG, ZE5JJ, ISMSH and a JA6. All these hearings and contacts were on 432 MHz. Ray is now working to put his 28 foot dish on Meridian Transit position which will allow him to see the moon any time it passes within the position. He is currently doing Radio Astronomy work with his dish. ZL2BGC and ZL3AAD are almost on 432 MHz EME, and a KV6 is working on a 20 foot dish. Ray has also obtained a new type GAS FET for his receiver front and which should further aid his reception of the weak signals.

#### PORT LINCOLN NEWS

Peter VK5ZCT writes from Pt. Lincoln at the lower end of Eyre Peninsula to say that amateur radio is forging ahead there. They have formed the Lower Eyre Peninsula Radio Club, which now has a membership of 30. Licensed members include JAG, JAT1, JAT2, JAT3, JAT4, JAT5, JAT6, JAT7, JAT8, JAT9, JAT10, JAT11, JAT12, JAT13, JAT14, JAT15, JAT16, JAT17, JAT18, JAT19, JAT20, JAT21, JAT22, JAT23, JAT24, JAT25, JAT26, JAT27, JAT28, JAT29, JAT30, JAT31, JAT32, JAT33, JAT34, JAT35, JAT36, JAT37, JAT38, JAT39, JAT40, JAT41, JAT42, JAT43, JAT44, JAT45, JAT46, JAT47, JAT48, JAT49, JAT50, JAT51, JAT52, JAT53, JAT54, JAT55, JAT56, JAT57, JAT58, JAT59, JAT60, JAT61, JAT62, JAT63, JAT64, JAT65, JAT66, JAT67, JAT68, JAT69, JAT70, JAT71, JAT72, JAT73, JAT74, JAT75, JAT76, JAT77, JAT78, JAT79, JAT80, JAT81, JAT82, JAT83, JAT84, JAT85, JAT86, JAT87, JAT88, JAT89, JAT90, JAT91, JAT92, JAT93, JAT94, JAT95, JAT96, JAT97, JAT98, JAT99, JAT100, JAT101, JAT102, JAT103, JAT104, JAT105, JAT106, JAT107, JAT108, JAT109, JAT110, JAT111, JAT112, JAT113, JAT114, JAT115, JAT116, JAT117, JAT118, JAT119, JAT120, JAT121, JAT122, JAT123, JAT124, JAT125, JAT126, JAT127, JAT128, JAT129, JAT130, JAT131, JAT132, JAT133, JAT134, 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In addition, for amateurs residing outside Oceania, contacts with VK RNARS Members on the 3.5 MHz band will count double points. For the purposes of this award, any RNARS Maritime Mobile Member when located inside Australian waters may be counted as a VK Member.

3. The award will be endorsed ONLY on the request of the applicant and the following endorsements are available: "ALL CW", "ALL

SSB", "ALL 3.5 MHz", "ALL 28 MHz", "ALL NOVICE", "FIVE-BY-FIVE". The last endorsement being for gaining at least five points on each of the five high frequency bands.

4. To claim the award, no QSLs are required. However full log details showing the VK Member (or /MM plus QTH) worked, their RNARS number, date, time, frequency, mode, plus an application fee of \$1.50 Aust. or 7 IRCs are to

be sent to the Endeavour Australia Custodian, Mr. R. Baty, VK5MD, 43, HMAS Australia Road, Henley Beach South, SA 5022, Australia. Please ensure all cheques are in Australian currency and made payable to "A. Baty". Clearly state what endorsements are claimed. Certificates to successful applicants will be forwarded by airmail as soon as possible after the claim has been checked.

## JOHN MOYLE MEMORIAL NATIONAL FIELD DAY CONTEST 1979—RESULTS

### 24 HOUR

#### Section A: Tx Phone.

50X	3508	4AHO	240
4NFU	1613	4NPN	102
3NZM	1352	8NT	85
4XZ	1122	4NDX	60
4ARH	250	4NLY	60
4ADD	240	4NHS	60
4AAG	240	4NDW	60

#### Section B: Tx CW.

No entries.

#### Section C: Tx Open.

50R	2079	2BDT	390
3AUQ	1756	2VEO	125
3AKG	1295		

#### Section D: Tx Phone Multipl.

4WIZ	8148	9	4FM	2531	2
8DA	5727	8	4WIT	2157	13
3BGG	5328	5			

#### Section E: Tx Open Multipl.

3ATL	15581	17	1WI	3445	5
2BKL	8455	16	5ZL	3269	7
3APC	7678	19	1RC	3094	2
3ATM	7250	12	1CA	2841	3
3ATN	6371	6	7NB	2713	9
2WG	5532	9	4WIP	2218	7
2BTZ	4213	8	3AWS	2157	6
3BML	4014	10	2AM	443	2

#### Section F: Tx VHF.

1ACA	1702	42IG	250
3YLD	1445	28UT	232
4ZPG	312	4PV	102

#### Section G: Home Tx.

3XB	1955	3KS	750
3AEW	925	4AZE	455
7KC	845	3KK	355
1RP	830	7NFR	340

#### Section H: Rx.

L30042	550	L40018	545
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### 6 HOUR

#### Section A: Tx Phone.

5NDY	471	3NEA	323
5NIM/ZIM	450	3EF	259
3AAW	245	4PJ	150

#### Section B: Tx CW.

2JM	374	3XU	256
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#### Section C: Tx Open.

2EL	1038	SALX	467
3VF	624		

#### Section D: Tx Phone Multipl.

3ATO	2057	10	40C	980	3
4BA	1056	5	3CAU	712	4

#### Section E: Tx Open Multipl.

3UV	1550	5	4WIN	1556	10
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#### Section F: Tx VHF.

3AVJ	613	22TB	68
3ZJS	598		

#### Section G: Home Tx.

7BD	855	2BQS	345
P29CG	525	3ZPA	270
5OU	470	1LF	155
4ADC	435	5NLC	100

#### Check Logs:

3KK, 3LR, SAC, BBW, 5WIE, 4AMA/MM, 4ATS, 4WR, 6WZ.

Log presentation was much better than in the "RD". Please note carefully in future the date of the postmark required for a valid log.

Note third figure in sections D and E represents number of operators.

### CONTEST CHAMPION TROPHY

Aggregate points so far allocated to individual amateurs towards this trophy are shown, however all points are subject to confirmation of WIA membership. Other nominated contests for this year are the VK/ZL and the RD.

### ALLOCATED POINTS

10 points:	3AUQ.
10 points:	2HZ, 40Q, 50X, 50R, 3YLD, 3XB, 5NDY, 2JM, 2EL, 3AVJ, 7BD.
9 points:	2ZBD, 4NFU, 4ZPG, 3AEW, 5ZIM/NIM, 3XU, 3VF, 3ZJS, 5OU.
8 points:	3NZM, 3AYL, 4ZIG, 7KC, 3AAW, 5ALX, 2BTB, 3AUJ.
7 points:	4XZ, 2BDT, 2BUT, 1RP, 3NEA, 2BQS.
6 points:	2YHG, 4ARH, 2VED, 4PV, 3KS, 3EF, 3ZPA.
5 points:	4ADD, 4AZE, 4PJ, 1LF.
4 points:	4AAG, 3KK, 5NLC.
3 points:	4AAG, 7NFR.
2 points:	4NPN.
1 point:	8NT.

Certificates for the 78 RD, the Ross Hull and the John Moyle were held up by the postal dispute but should now be delivered.



Mike Bazley VK6HD

6 James Road, Kalamunda W.A. 6076

### DXCC NOTES

#### DESECHEO ISLAND (Pronounced DAY-SAY-CHAY-O)

I hope all you keen DXers caught the operation from this island on 5th, 6th and 7th March. By the time you read these notes we may have ARRL accreditation for this latest addition to the DXCC active countries list making a new total of 320.

The story about Deseccho Island is most interesting. This island lies in the Caribbean Sea, between the Dominican Republic and the Commonwealth of Puerto Rico, at latitude 18° 23' north and longitude 67° 29' west and occupies an area of about 1.46 square kilometres. It has no inhabitants, no drinking water and its vegetation is of desert type.

The island is a national wildlife refuge of the USA and is administered by the US Department of Interior, Fish and Wildlife Service. As the island was administered separately from Puerto Rico, it was eligible for accreditation as a separate country for the DXCC listings.

The Northern Californian DX Foundation started to plan a DXpedition to the island using the call sign KP4AM for 6th to 12th September, 1978. This was to be an all band around the clock operation with four transceivers, linears, beams, etc. However this DXpedition was delayed for several reasons including the awaited announcement by the ARRL of the DXCC status of the island and obtaining the required permission from the US Department of the Interior.

In the meantime KV4KV and WDX organised their own DXpedition and proceeded to the island where they operated from 12th to 16th October, 1978, and produced about 6,000 QSOs. They spent the days operating on Deseccho and the nights aboard their boat. As a result of this operation the proposed DXpedition by KP4AM was temporarily shelved pending further demand for the island.

QSLs for KV4KV were issued and the ARRL was about to recognise the operation for DXCC when a letter of protest was received at ARRL HQ from the US Department of Interior complaining about illegal entry on Deseccho National Wildlife Refuge by ham operators. This was back in late December 1978.

As a result, the ARRL posted a stop signal on accreditation for this operation and the latest unofficial information is that QSLs from KV4KV-Deseccho will not be recognised for DXCC.

Accordingly the Northern Californian DX Foundation, in co-operation with the ARRL and the US Department of Interior, proceeded with the previously planned DXpedition and the island was activated under the call sign KP4AM/D in early March. We await official word from the ARRL before adding this new country to the DXCC listings.

### SABLE ISLAND

Advice has been received that the operation from Sable Island by VE1MTA during the period August/September 1978 was not legal. Further submissions of VE1MTA cards for Sable credit will be returned uncredited and I await official confirmation from the ARRL before rescinding credits already given for this operation. (Acknowledgement WRN LIDXA.)

### PROPOSED NOVICE AWARD

I have received several suggestions that the WIA should issue an award specifically for Novice operators. I agree that some recognition should be given for achievements by our Novice operators as the WIA awards programme only caters for HF and VHF operators at this time.

Several criteria should be considered when a new award is created, for example—

1. The award should be an attractive piece of paper worthwhile pinning up in the ham shack.
2. The rules should provide for a special effort on the part of the operator to qualify for the award but must not be too restrictive as, for example, the WAWKCA (VHF) award.
3. The rules must allow an even chance for Novice operators in all VK call areas to qualify.
4. GCR rules to apply as QSL cards and postage are now a major expense for ham operators.
5. Separate endorsement for all SSB or all CW.
6. The award to be issued to VK Novice operators only. Once you achieve full call status you become ineligible.
7. The award must not be too difficult to administer. (From the award managers' point of view.)
8. A nominal fee should accompany all applications. I have received one or two award applications lately that have not contained any donation to the coffers. If I am not very careful I will soon reach the stage where I will have to finance this job on spare air.

As a suggestion I think the rules of the WAWKCA award as published in the March 1979 AMATEUR RADIO could be suitably amended to provide the basis for a proposed WAWKCA (Novice) award. Novice operators would be required to complete the 22 QSOs but would have to work hard to catch a VK0 and VK9.

I invite any suggestions or comment before I approach Federal executive to see if they have any funds available to cover the considerable printing costs that would be involved.

Best 73 and Good Hunting.

# SIDE BAND ELECTRONICS IMPORTS

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A few words of doubtful wisdom about my recent struggles with TRIO KENWOOD AUSTRALIA. After buying around \$100,000 worth of transceivers and accessories from them in the 6 months between May and November 1978, they were unable to supply me more than a miserable 5 pieces TS-120-V just before CHRISTMAS 1978 and no promise but a few more in FEBRUARY 1979. Naturally I objected to that treatment and also because their prices had become equal to what the TS-120-V costs retail in Japan, I decided to import a quantity of TS-120-V sets only, directly. As a result I had stock of them when my "friends" in Artarmon had none yet and that must have hurt them, consequently their "warning" in the APRIL 1979 issue.

TRIO KENWOOD JAPAN sell their products under the TRIO brand in Japan and exports the same as KENWOOD units. There is absolutely no difference between a TRIO and a KENWOOD TS-120-V. If Artarmon maintains there is, they simply are not telling the truth. I fully guarantee my TRIO TS-120-V imports myself and fortunately can sell them a lot cheaper than when acquired through the Artarmon Office.

But again, TRIO and KENWOOD are one and the same. My TS-120-V's carry the TRIO KENWOOD CORPORATION tag and come with English manuals. As a rugged individual in this amateur equipment business for 15 years since 1964, I have been accused of importing SWAN, YAESU MUSEN under cover, assembled in Hong Kong or salt water damaged by parties who tried to explain why they had to sell dearer than I could — all sour grapes and nothing else. Arie Bles VK2AVA

## HY-GAIN ANTENNAS:

12-AVQ 10-15-20M vertical .....	\$50
18-AVT/WB 10-80M vertical .....	\$125
TH6-DXX 10-15-20M 6-el yagi .....	\$300
TH3-MK3 10-15-20M 3-el yagi .....	\$260
TH3-JR 10-15-20M 3-el yagi .....	\$175
204-BA 20M 4-el tiger array .....	\$230
2M 5-el yagi w/balun 6'3" boom .....	\$25
2M 8-el yagi w/balun 12'5" boom .....	\$30
11M 5-el yagi 17' boom .....	\$70
BN-86 balun for beam buyers .....	\$20
HY-Q (USA) 50-ohm balun .....	\$15

## ROTATORS AND CABLES

All rotators for 28V AC operation-	
KEN KR-400 medium duty .....	\$125
CDR BT-1A light duty w/push	
button programmable .....	\$90
CDR ham III heavy duty .....	\$175
CDR tail twister extra H/duty .....	\$225
Bottom bracket CDR rotators .....	\$10
KS-065 stay/thrust bearing	
1 1/4" to 2 1/2" masts .....	\$25
RG-58U co-ax cable, per yd. ....	30c
RG-8U foam co-ax cable, per yd. ....	80c
8-cond. rotator cable, per yd. ....	60c
7/8" H.D. VHF/UHF co-ax, per yd. ....	\$3
CABLE-cutting and packing, per length .....	\$1.50

## ACCESSORIES

Voltage regulator 18V AC input	
12V DC 3A output .....	\$23
240/18V AC transformer .....	\$10
5M RG-58U w/PL-259 one end .....	\$2.50
Bumper mounts 3/8" 24-thread .....	\$5
Gutter mounts 3/8" 24-thread .....	\$3

## CO-AX CONNECTORS

PL-259-SO-239 cable joiners, ea. ....	75c
Right angles & T connectors, ea. ....	\$1.50
GLP right angles RG-58U to SO-239	
w/lock nut & weatherproof cap .....	\$2.50
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In-line mic sockets 3 & 4-pin, ea. ....	75c
Mic sockets 3 and 4 pin, ea. ....	75c
MLS right angle-RG58U to PL-259 .....	90c

KDK KYOKUTO DENSHI model FM-2016A 2 Meter 144 to 149 MHz 1000 channels 15 to 20 Watt FM transceivers with digital read-out, 4-channel memory and scanner, with microphone and mobile bracket, RIT, the lot for only .....

## KENWOOD PRODUCTS

TS-520S 10-160M transceiver .....	\$675
TS-700 SP 2M all mode trans. ....	\$850
TS-120V 10-80M mobile trans. ....	\$550
TR-7625 25W 2M FM trans. ....	\$460
TL-922 10-160M linear amp. ....	\$1100
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VFO-820 for TS-820S .....	\$185
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SP-520 for TS-520S .....	\$30
YG-3395C CW filter (TS-520S) .....	\$50
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MC-10 hand held microphone .....	\$20
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BS-8 pan adaptors .....	\$65

## YAESU-MUSEN PRODUCTS

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FT-301S 10-160M mobile trans. ....	\$600
FRG-7 .5-30Mhz receiver .....	\$319

## NOVICE SPECIALS — TRANSCEIVERS

10M Sideband SE-502 USB/AM 15W PEP-240V	
AC 12V DC-inbuilt SWR/RF meter 28.3-28.6 mhz-	
clarifier tuning transmit and receive .....	\$125
10M Universe 224-M USB/AM 15W PEP 12V	
DC 24-ch. 28.480 to 28.595 mhz, 5-khz	
steps-clarifier tuning transmit and receive .....	\$100
CONVERSION CRYSTALS for amateur licence holders	
— set of 8-crystals to convert 23-ch. 27-mhz CB units	
to 28-mhz. Suitable for Kraco, Sideband, Universe, Hy-	
range V etc., converts as per Universe 10M above —	
CRYSTALS and instructions .....	\$40

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Arie Bles (VK-2AVA) Proprietor

Roy Lopez (VK-2BRL) Manager

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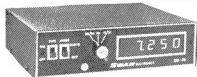
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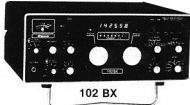
## Microprocessor Technology Swan's Success Story

Swan's high technology engineering department is challenging the best in the world. In keeping with the master plan of establishing Swan as number 1 in its areas of expertise, two more state-of-the-art transceivers will be announced at the Dayton Hamvention the last week in April.

The first is the microprocessor controlled, digital synthesized ASTRO 150 amateur HF Transceiver. With powerful 235 watt PEP and CW input on all bands, and extended frequency coverage in the 2-30 MHz spectrum, it is bound for instant success. The all electronic tuning VRS (variable rate scanning) and associated microphone remote tuning gives the operator complete and precise control.



ASTRO 150



102 BX

Standard features include, full or semi break-in selectable in CW mode, narrow band CW filter, USB/LSB, memory, VOX/PTT, and WWV reception. NASA (National Aeronautics and Space Administration) has already ordered the ASTRO-150 and 1500Z linear amplifier combination.

A second state-of-the-art HF amateur transceiver, the 102-BX, is to be announced at the Dayton Hamvention. This unit offers complete base station capability in one chassis. Features include all the standard functions provided by top line equipment plus dual PTO's for true crossband operation —full/semi break-in, variable RF band-pass, —IF gain—, RF gain and audio passband display.

### TRANSMITTER SPECIFICATIONS

#### Power Output Rating

Minimum 100 W PEP, single sideband and CW All Bands @ 1.0 VBR, measured by 50 ohm resistive load

#### Unwanted Sideband Suppression

Greater than 60 dB

#### Carrier Suppression

Greater than 50 dB

#### STANDARD FEATURES:

- State of the art design
- State of the art tuning
- Completely solid state
- 10 dB meters
- USB, LSB, CW
- Filter shape factor 1:1
- CW monitor with adjustable pitch and level control
- Amplifier relay keying
- Noise blanker
- 25 Kc calibrator, built in
- Made in the USA by Swan craftsmanship
- Operates from 11 to 15 VDC, inverter regulator ground
- Current drain 350 Ma receives, 200 Ma maximum in transmit at 13.8 VDC with dual meter, high on current drain is approximately 100 Ma more
- Internal speaker
- Semi CW Break in
- Mobile mount brackets (optional)

### 100 WATTS SOLID STATE MOBILE



AVAILABLE NOW FOR ONLY \$630.00

#### SPECIFICATIONS

Frequency Range — Standard  
90 meters (1.5 — 4.0 MHz)  
40 meters (7.0 — 7.5 MHz)  
20 meters (14.0 — 14.5 MHz)  
15 meters (21.0 — 21.5 MHz)  
10 meters (28.5 — 29.0 MHz)

#### Extended Frequency Coverage

500 kHz segments of 10 meter band 28.0-28.5, 29.0-29.5, 29.5-30.0 Hz, requiring standard crystal with optional crystal for desired segment. No realignment required.

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9 mHz quartz crystal filter, 2.7 KHz bandwidth, 1:1 shape factor

#### Calibrator

Built-in 25 kHz calibrator

#### VOX

Built-in standard

#### Noise Blanker

Built-in standard

#### Mobile Mount

Included standard

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### KENWOOD



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TS-120-V all solid state transceiver 30 W.P.E.P.  
TS-520-S 160-10M. Transceiver  
TS-820-S 160-10 M. Transceiver  
R-820-S 160-M. Transceiver  
R-820 Communications receiver  
TS-700-SP. All mode 2M. transceiver.  
TS-600-A All mode transceiver  
TS-7000-A 2 M FM. 25W. Transceiver  
TR-7500 2 M. FM. 10.W transceiver  
TR-7600 2 M. FM digital transceiver 800 CH.  
TR-8300 70. CM. FM. Transceiver  
VB-2200-A. Power booster for TR-2200  
VFO-30-G Remote vfo for TR-7200 TX-12. MHZ.RX. 45. MHZ.

#### OPTIONAL ACCESSORIES

VFO-120  
PS-20  
MB-100  
YK-88C  
SP-120

#### KENWOOD PRODUCTS

TR-7200-G 2.M. FM 10.W Transceiver  
TR-7010 2.M. SSB 10.W. PEP Transceiver  
TV-502 2.M. Transverter  
TV-506 6.M. Transverter  
TL-922 2 KW. PEP. Lineal amplifier  
SP-8 Regulated Power supply 8.Amps  
VFO-520-S External VFO for 520-S  
VFO-820 - External VFO for 820-S  
VFO-700-S External VFO for TS-700-SP  
SM-220 Station monitor  
BS-8 and BS-5 PAN adaptor  
SP-820 Deluxe Speaker consul  
SP-520 Speaker consul  
SP-70 Speaker consul for TS-700 & 600  
VOX-3 Vox unit for TS-700 & 600  
DS-1-A DC converter for 520-S & 820-S  
DG-5 External digital display TS-520-S  
AT-200 Antenna coupler  
MC-30-S Microphone 500 OHM  
MC-35-S Microphone 50. K. OHM  
MC-10 Microphone 50. K. OHM.  
MC-50 Deluxe desk Microphone dual imp  
HC-2 Deluxe Ham clock  
YG-68 CW. filter for TS-820  
YC-3395 CW filter for TS-520  
LA-30-A Lowpass filter  
HS-5 Headphone  
HS-4 Headphone  
RD-15 Dummy load 450 MHZ. 15. Watts  
RD-300 Dummy load 150 MHZ. 300 Watts.

#### HY-GAIN ANTENNAS

12-AVQ 10-15-20M vertical 13 1/2" tall.....	\$50
18-AVT/WB 10-80M vertical 23" tall.....	\$125
TH6-DXX 10-15-20M senior 6 el. yagi 24' boom.....	\$300
TH3-MK3 10-15-20M senior 3 el. yagi 14' boom.....	\$240
TH3-JR 10-15-20M junior 3 el. yagi 12' boom.....	\$175
204-BA 20M 4 el. Tiger Array 26' boom.....	\$230
HY-QUAD 10-15-20M full size cubical quad.....	\$260
2M 5 el. Yagi w/balun 6'3" boom.....	\$25
2M 8 el. Yagi w/balun 12'5" boom.....	\$30
2M 14 el. Yagi w/balun 15'6" boom.....	\$40
BN-86 Balun 50 ohm 1:1.....	\$20
BU-5 Balun 50 ohm 1:1.....	\$14

#### ANTENNAS SUITABLE FOR 10M

11M 5 el. Yagi 17' boom.....	\$70
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CLR-2 5/8 wave vert. w/3 radials 19'10" 11M.....	\$40

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KEN KR-400 rotator medium duty 28V-AC.....	\$125
CDE HAM L11 rotator heavy duty.....	\$175
RG-80U Polyfoam Coax.....	80c per yard
RG-58U Coax.....	30c per yard
8 core rotator cable.....	65c per yard

#### SKY-BAND MOBILE HELICAL ANTENNAS

SKY 80 six feet long 3.5 MHZ.....	\$28
SKY 40 six feet long 7.060.....	\$26
SKY 20 six feet long 14.150.....	\$26
SKY 15 six feet long 21.100.....	\$25
SKY 10 six feet long 28.500.....	\$24

#### CRYSTAL FILTER, 9 MHz, similar to

FT-200 ones. With carrier crystals..... \$39

#### COAX CABLE CONNECTORS

PL-259  
SO-239 Chassi Mount  
Male to male joiner  
Female to female joiner  
Angle connector

#### Accessories

SWR 50A 3.5 - 150Mhz SWR meter.....	\$26
12VDC regulated supply.....	\$26
5M RG 58-U w/PL-259 one end.....	\$3
Bumper mount c/w/with 3/8" 24-thread ant. mount.....	\$7
Gutter mount c/w/with 3/8" 24-thread ant. mount.....	\$4.50

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PETER SCHULZ, VK2ZXL

Ron Henderson VK1RH  
Federal WICEN Co-ordinator,  
53 Hannaford St., Page ACT 2614  
Ph. (082) 54 2059, A.H.

## WICEN EMERGENCY PLANS

This issue I wish to continue the WICEN training course theme with some thoughts on WICEN Emergency Plans.

Experience has shown that such a plan, be it for a State, region or area, needs to consider most of the following factors:

- Regions.** Where an area of responsibility is subdivided into regions or areas it is worthwhile including a marked map clearly delineating boundaries.
- Tasks.** The likely WICEN tasks can be expressed in a couple of clear statements, e.g. VHF local coverage or HF links, also mobile and fixed requirements.
- Organisation.** The local organisation showing both higher and lower responsible authorities and liaison should be shown on a line diagram.
- Responsibilities.** The duties of key office-bearers, e.g., co-ordinator, deputy co-ordinator, etc., should be clearly spelt out.
- Activation.** When considering the aspects of activation of an emergency network list the likely reasons for activation, the recognized requesting authorities, i.e. SES, Police, and the need for P. and T. clearance.
- Call-out Procedure.** The call-out procedure follows from the activation considerations. It should include the method of implementation and deployment and include key names and addresses, with telephone numbers, of both likely requesting authorities, WICEN office-bearers and the P. and T., e.g. the DRI.
- Co-operative Authorities.** It is worthwhile listing likely government departments and organizations with whom co-operation could be expected during an emergency.
- Facilities.** This heading covers traffic and relay stations, net monitoring, mobile and portable stations, including vehicle load lists and emergency frequencies.
- Operating Procedures.** A precis of operating procedures, derived from the WICEN "Emergency Service Communications Procedure", or "the little grey book", Civil Defence Communications Part III, 1969, is usefully included for it keeps all the information and instructions in one paper.
- Regulations.** As a closing reminder, the relevant Regulations from the Handbook should be noted. These are: Reg. 84: Secrecy of Communications. Reg. 94: Authorization of Emergency Networks.

Reg. 96: Clearance of emergency frequencies.  
Reg. 109: Emergency communications.  
I am sure you will find that, after compiling your WICEN Emergency Plan, you will have a better feel for your role and



In a recent issue of AR I gave an example of how to send a formal message by radio. Here I wish to cover the recording and logging actions associated with being a WICEN radio station.

### LOGS

The primary record is the station log: It should contain details of time, station called or calling, and the event or message identity. At an out-station the log is adequate for all recording, as formal messages can be logged by their originators number and date time group (DTG). You will recall from my last article that these uniquely reference any formal message.

### OPERATOR'S CHECK SHEET

The Operator's Check Sheet (CDF7) is normally used at control stations, relay stations or multiple net locations to supplement the log for all formal traffic. The check sheet is printed in two parts, an "IN" section and an "OUT" section and should contain sufficient information to record and trace formal messages. The top part of a check sheet, CDF7, is reproduced below.

### THE MECHANICS OF MESSAGE HANDLING

The mechanics of message handling follow the following sequence:

Acceptance of messages — scan for completeness,

will be able to approach it with confidence. And that embraces one of the key phrases in the WICEN mission, namely "... a pool of trained licensed operators, with equipment, available for deployment ...".

note a local sequence No. and receipt time in the top shaded area, add DTG if necessary, check "from" and "to", check releasing officers name/authority, place in sending queue in priority order.

### Sending messages —

log to reference message uniquely, either in log book or operator's check sheet if used, complete D shaded box at foot of message form, file safely.

### Receiving messages —

log as for sending, complete R shaded box at foot of message form, keep a duplicate file copy if directed.

### Delivery of messages —

deliver to action (and info) addressees by runner or hand.

Note that the present trial arrangements concerning emergency networks, introduced by P & T, require you to keep a complete log and to retain messages for 12 months.

R. G. Henderson,  
Federal WICEN Co-ordinator.

<b>CIVIL DEFENCE</b>													
<b>OPERATOR'S CHECK SHEET</b>										DATE TIME		CALL OUT	
IN MESSAGES										OUT MESSAGES			
No.	Date-Time Group	GR	Time	From	Open book	No.	Sub. Reg. No.	Procedure	Date-Time Group	GR	Time Sent	Open book	
1						1							
2						2							

Layout of operator's check sheet (form CDF7)

## WICEN ACTIVITIES IN VICTORIAN EASTERN ZONE

It seems that our activities in Amateur Communications are being increasingly noticed.

Many Amateur operators are active with State Emergency Service (SES) groups—passing on "know how" to non-technical operators and joining the various SES local groups. This results in police and other organisations becoming more familiar with our communication potential.

This Zone, upon request, had two worthwhile exercises during March 1979.

During the times of 1900 hrs. March 10 through to 1900 hrs. March 11, a sizeable team helped with communications for the Marley Point Overnight Yacht Race.

This event had over 600 yachts participating starting at the top of Lake Wellington, sailing through the night across the lake, through McLenans Straits, into Lake Victoria, and on to finish at Paynesville.

The WICEN involvement was to pass messages from starting point to finish point and between two intermediate check points. These messages were for the Gippsland Lakes Safety Council and St. John Ambulance Brigade.

Mostly the comms were on 148 MHz and 3,600 kHz. Two metre transceivers, with operators, were on two St. John Ambulance motor boats, and one Safety Council patrol boat.

We also monitored messages on the Safety Council frequencies used by most of the yachts. Ian Foster VK3ST, on his launch "Leanna", worked 80 and 2 metre marine mobile at the finish line, and he organised a land station at the same point. Land stations were powered by batteries and portable motor alternators. Zone members supported this exercise very well, and all enjoyed the experience even though we worked through the night without sleep. Several Novice operators were introduced to portable operations, and we left most of the message handling to them.

Three weeks later the Yacht Club invited us all to an excellent free barbecue at the Club House, where we were thanked and complemented by the Yacht Club, Safety Council and St. John Ambulance Division for a communication job well done.

Then on March 17 and 18 we were involved with the "Academy" Car Rally, covering some 200 miles through East Gippsland back roads and tracks. Our job was to pass messages relevant to the safe conduct of this event and to pass car numbers from check points to the next one ahead. Operators worked through the night under portable conditions at manned posts in Sale, Davey Knob, Bruthen, South Bruthen and Weyburn. We were officially thanked for a job well done and all operators concerned enjoyed and valued the experience.

Many operators took part in these exercises, but are too numerous to mention here. Our thanks to all concerned.

Brian VK3BBB relayed messages between aircraft and ground in connection with the WICEN comms with the recent Power Boat Race from St. Kilda to Lakes Entrance.

From Keith V. Scott VK3SS, Zone Co-ordinator.

*Are you checking  
our bands for*

## INTRUDERS

AND REPORTING SAME TO  
THE INTRUDER WATCH  
CO-ORDINATOR?

# MAGAZINE INDEX

Syd Clark, VK3ASC

## RADIO 25 September 1978

The Mono-Jay Vacation Antenna; The Sounds of History.

## RADIO 25 October 1978

When Radio Was Fun; The Unseen Eye; A Short History of Aircraft Radio.

## RADIO COMMUNICATION December 1978

Heatsinks; Quartz 16, 144 MHz FM Transceiver (Review); Anti-TVI Filters; Circuit Design with NAND AND NOR; New Region 1 IARU Operating Standards; Transatlantic DX Contacts on 144 MHz; The History of Six-Year Study of the Lower Troposphere Over Southern England . . . ; Radio Communications and the ITU.

## RADIO COMMUNICATION January 1979

A 7 MHz Vertical Antenna; Preliminary Results of Six-Year Study, Pt. 2; HF Propagation Predictions Supplement; The 1978 AGM; General Rules for VHF/UHF/SF Contests 1979; RSGB HF Contest 1979; HF RX Contests 1979; Code of Practice for VHF/UHF Contest Operation; Code Letters for Use in RSGB Contests.

## SHORTWAVE October 1978

Amateur Radio-Communication or Technology, or Both, Pt. 6; Multi-Band with the NR-56 FM Monitor Receiver; From Stornoway on Forty Metres.

## 73 June 1978

Happiness is Being a Ham Manufacturer; Extended Double Zepp; New Dipole Feeder; The Cliff-Dweller's Delight; Wait Till You Try 16 Elements; Working 15m with a 20m Beam; A Better Feedthrough for Cables; Resurrecting the Beverage Antenna; How to Hang a Longwire; The "German" Quad; Mobile in Disguise; Better than a Quad; The Perverted Double Veer Antenna; Creeping Crud Got Your Signal; Towering Low Band Antennas; The 80 Metre Pole Crusher; Phased Verticals for Easy DX; Modernising the Matchbox; The Miserly Magnetic Antenna; The 75 cm DX Chaser Antenna; The Invisible All-Band Antenna; Who Says Verticals Don't Work; Low Cost Keyboard—II; Computerized Loop Antenna Design; Hey! Wait for Me; Morrow's Marvelous Monitor; Enjoy All Bands with a Remote Tuner; New Use for CB Antennas; Confessions of a Vertical Fanatic; Novice Guide to Phased Antennas; The 21 Element Brown Bomber; The "Towerless" Tower; The Two-Hour Two Metre Beam; Now Try 1296 MHz; The OSCAR Boppers; Cushcraft Does It Again; The S-Meter Bender; Amazingly Simple Log Periodic Antenna; Disguised Birdhouse Vertical.

## 73 November 1978

Electro Sculpture; The Sumsue Method; The UART Gear Shifter; Silence Grathing Refrigerators; Bargain Pre-amp; Murphy's Masterpiece; How About Some Ham Shack Safety; Head 'Em Off at the (High) Pass; 555 Basics—And More; Educate Yourself; New RTTY Autoset; The Earliest Offset Ever; The Chip Switch; Automatic Repeater Offsets; CB to 10—The Lafayette Telast SS8-75; The History of Ham Radio; Build an FM Tweaker; Another Surplus Treasure; Piffit—Zapped Again; One Meter—Many Jobs; MDS: What Is It? FM Calibration on a Budget; Build the S9 Wonder; Build—A—Scanner; CB to 10; A Realistic PLL Rig; No More Excuses; The Junk Box Station; R-X Bridge + Calculator = VSWR; High Seas Adventure—Ham Style; Look What Followed Me Home; A Hex on Your 823; The Micro Maestro; SSTV Meets SWTPC, Pt. 1; Squelchifying Cheap Receivers; Try FM on 29.6 MHz; Build the Bruter; The Multifunction Scan Can; Be a Weather Genie; Happiness is a DMM Kit; Vintage Receiver Mods; Deep, Dark Secrets of the TR-7500; The TTL Life-Saver; Build the "Version Three"; Heath's GR-88 Gets Religion; Four Terminals Are Better Than

Three; CB to 10; A Realistic HT; The Circuit Board Aquarium; Build a Decent Dummy; Who Needs Transistors; Blockbuster RTTY Articles; Automatic Autopatch; Using Bargain Muffin Fans; Lorán-C as a Frequency Standard; Ham Help; An Experimenter's Delight.

## 73 December 1978

A X'er's Dream Vacation; Close Encounters; The Schizophrenic Triangle; From CW to Computers; A 28c Tootchone Mod; Space Age Surplus; An X-Band Transceiver; SSTV Record-Controller; Receiver Diseases; Autophasing the WEFAK; The Lunch Counter; Confessions of a Stripper; Tuned Feeders and Other Good Stuff; Build a Realistic S-Meter; Wow! A Good Portable Receiver; The Xilex Video Terminal; Light Up Your Life; High Seas Adventure—Ham Style; Whither Microprocessors; SSTV Meets SWTPC, Pt. 2; A Multi-Media Morse Machine; This Is Your Computer Speaking; RTTY with the KIM; DX Delight; Big Max Attacks; The Packet Radio Revolution; This Voltage Standard Is Precise; The 223 MHz Digital; WARC 79 Preview; The "Film-Film" Factor; Build the Flexi-Filter; The Classic Kilowatt; Ham Radio Goes to School; What's Your uF; Fail-Safe; Code Practice Oscillators; PCs Are Easy; The Games People Play; An Improved HV Tube Socket.

## CC October 1978

Inside ZKGVV—The Amateur and His Pacemaker; An Optimum Speech Filter; Results of 19th Annual CC 160 Metre DX Contest; Converting the Radio Shack Crossbow III CB Antenna for 10 and 15 Metre Use; The National NC-101X—A Receiver that Changed Amateur Radio; GC4DAA—Guernsey Island; CC Reviews; The Fleisher Corp TU-170 RTTY Terminal Unit; CC Reviews; The Electronic Research Model SL-55 Active Audio Filter; Ruse for the 30th Annual 1978 CC WW DX Contest; A GRPP Transceiver; The National Processor Module in the Kenwood S-820; A Look at the K3XW Antenna Fan; Amateur Radio Grounding, Pt. 2; Contest Calendar for October and Early November.

## CC December 1978

Amateur Radio Has Lost a Good Friend—Lawrence W. Le Keshan W2AB, 1920-1978; A CW Low Power Transceiver; The 100 Metres; A Four-digit One-CV Voltmeter—Almost; Chasing the Ultimate DX from Arezibo, Puerto Rico; Antennas 10, 15 and 40 Mx; The Ins and Outs of the Washington Scene; Sources of Aid for Prospective Amateurs; The EA8CR Multi-Multi Contest Story; Results of the 1978 CC WW WPX SSB Contest.

## CC January 1979

All About Kits, Pt. 1, Should I Build or Shouldn't I Build; Solid State Tailored R/C Substitution; A Novel Beam Direction Indicator; What QSL Cards Are and How to Use Them; The K8EEQ Story; An Ultra-Smooth Ball Bearing Keyer Paddle; Souping Up the Super Pro Receiver; Automatically Controlling Charge Current for NiCAD Batteries; Sunspots and Unusual Antennas; Solar Cycle Update; The Early Years; All the Power to the Load; Why Not Solar Power; An Inexpensive Method for Expanding Frequency Coverage; A Pipe Organ Multi-Band Vertical Antenna; The DC Analysis of a Transistor Amplifier; The Monster Quad; An Interface Concept for the Emergency Broadcast System and the Amateur Radio Service; Announcing the 23rd Annual CC WW WPX Contest.

## HAM RADIO November 1978

Mosfet Power Amplifier; Digital Synthesizer; Printed Circuit Layout Techniques; Monolithic Crystal Filters; 40 Metre Beam; Micoder Improvements; Multiple Quartz Wave Matching Transformers; Phase-Locked 9 MHz BFO; Mobile Antenna Magnet Mount; Digital Repeater/ID for RTTY; Tone Decoder; Antenna SWR Meter; IC Tester Using the KIM-1 Microprocessor; Simplified Capacitance Meter; Improvements for the Measurements 59 Grid Dipper.

## HAM RADIO December 1978

High-Frequency Transverter; Lightning Protection; Solar-Powered Repeater; Universal Digital Readout; Oscar Calc-putter; Simple Video Display; Collins 325-1 Improvements; Top-Loaded Delta Loop; Updated Vacuum-Tube Receiver; 1296 MHz Double Stub Tuner; 1.5 GHz Prescaler.

## HAM RADIO January 1979

Two-Metre Synthesizer; Measuring FM Deviation; 10 GHz Gunnplexer Transceiver; Fast and Quiet Transmitter/Receiver Pair; Adjustable 5-Ampere Power Supply; Ham-III Digital Readout; Anodizing Aluminium; CMOS Keyer; Digital Techniques: Basic Rules and Gates.

## RADIO COMMUNICATION February 1979

Ladder Crystal Filter Design; Power Transformers with Low Voltage Secondaries; A Rugby MSF Time Code Clock; Band Planning—145.8 to 146 MHz.

## RADIO 25 November 1978

The Bigger Type 2; Forgotten Discoveries; IARU Region One Conference (Hungary—1978); The H8BCV 2-Metre Beam.

## RADIO 25 December 1978

The UA3IAR Switch-Rotatable Quad; Amigos de las Americas.

## SHORTWAVE November 1978

Antennas—A Weak Link, Pt. 6; A Useful 45 MHz Crystal Oscillator.

## 73 October 1978

DXpeditioning; VHF On Your Frequency Counter; The KMCC Story; Good News; Mighty Mods for the 8205; Improving Heath's HT; Total Control; Oddball Splits and the IC-225; The History of Ham Radio, Pt. 6; Re-using Coax Connectors; Bidding from Magazine Articles; Super Simple TT Generator; Microstrip; Low-Pass Filter Primer; Hello Hamdome; More Coming of Age; Rejuvenate a Pawnee; High Seas Adventure—Ham Style; Build a Better Beeper; DMM Buyer's Guide; Triple Threat; The Ultimate T-Hunt; Two Metre HT Survey; Interrupts Made Easy; Use Computers? Who Me?; Bird Watching in BASIC Land; Computers and the Real World; World's Cheapest QSL; The Long-Term Effects of Working with ICs; The Lady Saw Red; The Frugal Alternative; PLL Techniques; Build a TTY Tester; It's a Ham's World; Attention Weather Watchers; Interchangeable Test Leads; Happiness is a Smart Scanner; Tweak Your Linear; CB to 10; Tune Circuits in Your Junk Box; Support Your Local Fire Chief; Improved Scanner for the VHF; One Plus; A Perfect Power Supply; Mobile Security Blanket; Further Adventures of the IC-225; Antenna Design: Something New; Build an Audible Transistor Tester.

## 73 January 1979

The Italian Freq Generator; Happiness is a WE-80; Explore the World of VLF; The SHAFT; A Remotely Tuned Matchbox; Diodes of the Dead; Building an Economy Receiver; The ST-5 Plus; Build a \$10 Digital Thermometer; CB to 10; Try a Little KISS; Autotrack II; The Twotter; Adam-12 Revisited; Digital RTTY Is Simple; Take the Pledge; Two Metre Tone Alert; Sneaky Car Security Alarm System; Design-a-Notcher; The COSMAC Connection, Pt. 1; Noise Bridge BASICS; The Morse Master; The Mini-MOUSE Key; One Step Further; Hurry for LF Filters; The Soft Touch Keyer; SOS Ship by CB to 10; Electronics Education by Mail Order; Time-Domain Reflectometry; High Seas Adventure Ham Style.

# S.E. QUEENSLAND TELETYPE GROUP

## SE QUEENSLAND TELETYPE GROUP

The aims of the group include promotion of the use of the RTTY mode, and education of amateurs in RTTY techniques. Towards these aims the group is organizing technical lectures for each of its monthly meetings and producing a series of circuit and other technical information for distribution to club members.

The group transmits a weekly teletype news broadcast under group members' call signs on Monday nights at 0930Z on 146.6 MHz (Ch. 52) and on 3540 KHz. A phone call-back is conducted after each news broadcast.

At the first meeting in February 1979, the following officers were elected: President, Doug Hunter

VK4ADC; Vice-President, Brian Beamish VK4AHD; Secretary, David Barnham VK4ADB; Treasurer, Brian Rickaby VK4RX; Technical Advisor, Roy O'Malley VK4QZ. The group has recently gained affiliation with the Wireless Institute, Queensland Division.

The group meets on the first Friday of each month at the Holland Park State High School, Baupause Road, Holland Park, Brisbane, at 8 p.m. Enquiries regarding the group may be directed to P.O. Box 274, Sunnybank 4109, or after hours telephone (07) 399 5366.

Yours faithfully,

D. Barnham VK4ADB, Secretary SEQTG. ■

## LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

The Editor,  
Dear Sir,

I refer to the letter from Edwin R. Rooms published in your March issue or, more specifically, to that gentleman's signature block.

I accept that his degree, his call sign and his being a dealer for Atlas Radio are all relevant to the subject matter of his letter; but what has his being a Yachtsman got to do with it!

As I believe I am well known in the amateur radio fraternity, I do not append the post-nominal initials to which I am entitled, but simply sign myself,

Yours faithfully,

Jim Lloyd VK1CQR,

Yachtsman, Photographer, Winemaker, Beekeeper, etc. ■

43 Barrett Street,  
Gympie, Qld.  
20-3-79.

The Editor,  
Dear Sir,

I wish to thank those amateurs who so generously answered my plea for information on the Geloso TR222 Tx.

I received five (5) replies, two of which included photographs of the circuit and information on a technical bulletin from Geloso (Italy) for my perusal and return.

Many thanks.

Your sincerely,

Barrie Bestmann VK4LN. ■

The Editor,  
Dear Sir,

It is most fortunate that Mr. Rex Black VK2YA is not typical of the full-call amateurs I have had the pleasure to be associated with. His holler-than-thou narrow minded attitude towards any new innovation to what he obviously considers to be his medium of communication cannot be tolerated by any clear thinking amateur, novice or full-call alike.

Members of the Wooley Bum Charter are worldwide and I for one know the dedication which went into the Novice class instruction organised by its members.

To refer to its members as "dregs of CB" and possessors of "sinister policies" is childish in the extreme, and as a Charter member I bitterly resent Mr. Black's unfounded and libellous allegations. On behalf of all Wooley Bum members I demand an apology through these pages.

Yours in anticipation,

David F. Timson VK3NZA WB2B.

33 David Street, Knoxfield, 3180, Vic. ■

21 Bovelles Street, Camp Hill,  
Brisbane, Q. 4152  
5th April 1979

The Editor,  
Dear Sir,

For general information. The ARRL (DXCC Section) have issued the following definition of a QSL card which is acceptable for DXCC credit:

"A valid contact, no matter how it is established, is a contact between two identifying stations who have established two way communication with each other. Regulations require that you identify the station you are working, as well as your own".

Please note that there is no mention of signal strength reports! As long as the card shows the call sign, date and confirms that a two way QSO was held, it will be accepted.

Therefore, the commonly held belief that a card must show a report of at least 3 x 3 (or 399) does not appear to be true!

Yours truly,

Fred Lubach, VK4 Outwards QSL Officer. ■

15-4-79.

The Editor,  
Dear Sir,

I noted with interest in April edition of Amateur Radio that someone is using H. O. Kellas VK3AHK's call sign. I wish to say that some of the Geelong hams are also having their calls used by "pirates", the main ones being VK3SY, VK3AGN, VK3APG, and my own, VK3ALG. This has been going on for at least four years. I just wonder how many other hams in Australia are having their call used also. I myself have been very active for 31 years. I have notified the Department of such practices.

F. A. Freeman VK3ALG. ■

3 Gardena Street,  
Pakenham 3810.  
16th April, 1979.

The Editor,  
Dear Sir,

As I am not yet a member of the WIA, it is only through the courtesy of a friend that I have just read the February issue of Amateur Radio. Two of the letters absolutely amazed me. Firstly, I am surprised that you saw fit to publish the letter on page 39 signed (?) VK3N ... as surely anyone making such allegations against David Ramsbottom, or indeed any other person, should have the intellectual fortitude to put his name to them.

As to the letter from Rex Black VK2YA, his libellous attack on the Wooleybum Club is unjustified and as a licensed amateur, licensed CB operator and a holder of the WIA Club Certificate No. 35, I resent the accusations and implications of the letter.

The generalizations and assumptions in his letter could only have been made by one totally unaware of the situation. The Club's award certificate can only be gained in one of two ways, firstly by qualifying as an amateur through one of the courses run by the Club, as I did, or secondly, by earning sufficient points by contacting by radio other members. It is therefore no more an attempt to take over the band than is the issue of, for example, a DXCC award, or a JARL award or membership of the Mopoke Club, etc., etc. To suggest that the Club is "determined to inject the substandard mental processes of the dregs of the CB movement" is offensive in the extreme to me, and I expect, probably futilely, an open apology from Mr. Black.

I have nothing but the highest praise for the care and diligence of the Club's radio course instructor who helped me and many others to qualify for a licence. Hardly the sort of behaviour one would expect from a group "determined, etc. . . ." as Mr. Black so vehemently asserts.

It is unfortunate that Mr. Black does not appreciate the Club's humour either. Possibly I may not agree with his type either, but I'm not going to make such a noise about it. I thought the true interpretation came from the Editor in a recent article on the Club, which was virtually along the lines of "To each his own, but after all it's a free world".

When it's all said and done, nobody has to join the Club or obtain a certificate unless they want to, or unless they have been given the opportunity to do so.

Or is that the trouble, hasn't Mr. Black been asked?

Yours faithfully,

D. E. Jackson VK3VAA, VBB 470, WB 35.

**Editor's Note:** So that you may obtain your own library of ARs and partake in the many other benefits of WIA membership, I have forwarded an application for membership to you under separate cover (VK3JUV). ■

## TECHNICAL CORRESPONDENCE

The Editor,  
Dear Sir,

Ref. mods to the FT101 in AR November, 1978.

On page 11 there is a mistake and also the info on changes to the 101-B and E. It should read:-

Locate the transistor Q2 in the 101 Mk. II and its bias resistors RS 4k7, and R6 22k; Q1 in the 101-B and E, and its bias resistors R1 4k7 and R2 22k.

I found this out the hard way!

Regards,

L. Martin VK2II. ■

The Editor,  
Dear Sir,

Because of the large variations in the "standards" adopted for calibration of receiver signal strength (S) meters the value of signal strength reports in assessment of the performance of an amateur station's equipment and aerial system is questionable.

The attached copy taken from December 1978 "Radio Communication" appears to be a move towards standardisation of calibration and as such should, I believe, be encouraged. Perhaps you would consider its publication and recommend its use.

Yours faithfully,

G. E. Wiencke VK6WX ■

## INTERNATIONAL NEWS

### "S-METER" STANDARDS

In order to make a uniform reporting system on the amateur bands possible, taking into account the widespread use of the 'subjective' S-system, and the large deviations between the characteristics of S-meters on current amateur equipment, IARU Region 1 recommends the use of the S-system for signal strength reporting on the amateur bands based on the following standards:

- One S-point shall correspond to a level difference of 6 dB.
- On the bands below 30 MHz a meter deviation of 59 shall correspond to an available power of a CW signal generator connected to the receiver input terminals — 73 dBm.
- On the bands above 30 MHz this power shall be — 93 dBm.
- The metering system shall be based on quasi-peak detection with an attack time constant of 10 ms  $\pm$  20 ms and a decay time constant of at least 500 ms.

### COMMENTS

- Signal reporting on the amateur bands at the moment is based on the well known 'subjective' RST system. Although the system is very useful, the availability of modern, sometimes professionally made, receiving equipment, makes the use of a less subjective system for the measurement of the strength of the received signal possible. The system to be chosen, however, must not deviate too much from the 'subjective' system.
- The first, and most important, standard to be recommended will be the definition of an S-point. A value of 6 dB seems very practical. It corresponds to an already widespread 'un-

official standard and give the least problems for non-mathematically-oriented amateurs.

- Once having agreed upon the value of one S-point, a second, less important, but very useful recommendation is the definition of a reference level.

Taking into account the practical situation it is not possible to define one reference level for all amateur bands. On the HF bands a level of -73 dBm (50V over 50 ohm) does not deviate too much from current practice. On the higher bands, however, where thermal noise is the limiting factor in many cases, a lower level must be chosen and -93 dBm (5uV over 50 ohm) seems appropriate.

#### STANDARD TABLE

S	HF bands dBm (V over 50 $\Omega$ )	Bands above 30 MHz dBm (V over 50 $\Omega$ )
9 + 40 dB	-33 (5mV)	-53 (500uV)
+ 30 dB	-43 (1.6mV)	-63 (160uV)
+ 20 dB	-53 (500uV)	-73 (50uV)
+ 10 dB	-63 (160uV)	-83 (16uV)
9	-73 (50uV)	-93 (5uV)
8	-79 (25uV)	-99 (2.5uV)
7	-85 (12.5uV)	-105 (1.25uV)
6	-91 (6.3uV)	-111 (0.63uV)
5	-97 (3.2uV)	-117 (0.32uV)
4	-103 (1.6uV)	-123 (0.16uV)
3	-109 (0.8uV)	-129 (0.08uV)
2	-115 (0.4uV)	-135 (0.04uV)
1	-121 (0.21uV)	-141 (0.021uV)

- Although the standards given above are based on continuous signals, in real traffic non-continuous signals (i.e. ASF) will be encountered. It is necessary, therefore, to define the measurement system in more detail.

In many cases the S-meter is coupled to the AGC system of the receiver. Therefore a quasi-peak detector will be taken as the standard, with an attack time constant of 10 ms and, although of less importance, the decay time constant shall be more than 500 ms.

- It is hoped that the recommendation will be followed by all equipment manufacturers, so that in the not too distant future one will know how to interpret the strength report of the other station.

Societies should advise their members about equipment manufacturers adhering to this recommendation, and try to avoid publication of receiver designs which do not, in principle, use the recommended standards. Simple means for calibration of at least the 6 dB level ratio should be published."

## WANTED

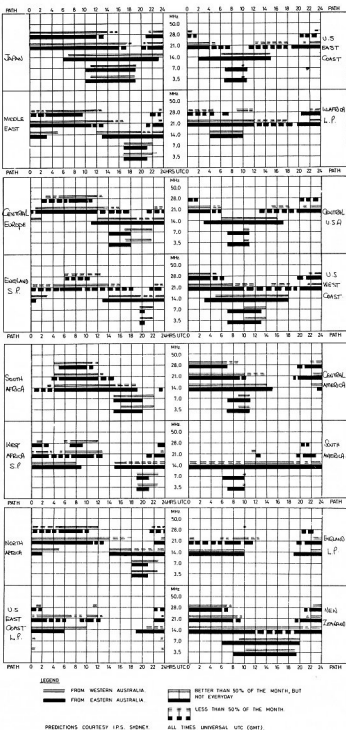
The Project ASERT Committee of the WIA is anxious to obtain a number of Rustrak miniature recorders, preferably having a range 0-1 mA and a chart speed of 5 cm/hour.

If any member or other person reading this advertisement is prepared to donate or sell a recorder of this type, the ASERT Committee would be most grateful.

Please have a look in your junk box and see what you can find; then either write to Box 150, Toorak, Vic. 3142, or telephone Les Janes (03) 338 9284 A.H.

# IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



Technical Articles  
Always Needed

IPS update for June is delayed due to mail strike — this is the chart for May for information only.

# MEET THE VK2 DIVISIONAL COUNCIL

Photo taken at WI Centre on the night of the 1979 Annual General Meeting.  
From l. to r.: Tim Mills VK2ZTM (Sec.), Ian Mackenzie VK2ZIM (Vice-Pres.), Stephen Pail

VK2VHP, Eric Van Der Weyer VK2ZUR, Fred Parker VK2NFF (Pres.), Phil Card VK2ZBX (Vice-Pres.), Henry Lundell VK2ZHE.

(Photo by Ken James VK2NWK.)



## 20 YEARS AGO

Ron Fisher, VK3OM

### JUNE 1959

The situation in June 1959 was much as it is today. The Editorial page puts it in a nut shell: To Geneva — What then? Sounds familiar. In fact most of the June issue was taken up with reports on the forthcoming Geneva conference and also the proposals released by the Post Master-General that we would have to face cuts in many of our popular bands. The proposed cuts were: 80 metres, down 100 kHz to 3.7 MHz; 40 metres, down 50 kHz to 7.1 MHz; 20 metres, down 100 kHz to 14.25 MHz; 15 metres, unchanged; 11 and 10 metres cut from 55 to 60 MHz, down to 56 to 58 MHz and an interesting one on the two metre band, a change from 144/148 to 146/150 MHz.

On the basis of this report, Federal Executive sent urgent telegrams to the then Prime Minister, The Rt. Hon. J. McEwan and other members of parliament. This apparently hit the right spot and a great deal of discussion followed in The House, most of which was reported in the June issue of Amateur Radio.

Supporters at the time included Senator Hannan, Mr. (later Sir) A. Fairhall VK2KB and Mr. J. Fraser, Member for the ACT.

A transcript of a talk given by Mr. A. Fairhall via VK2AWX on all HF amateur bands was printed in full.

As you can imagine, this left very little room for technical articles, but a description of a two stage transmitter for 7 MHz was included. Alan Smith VK3AN showed how to build it but omitted to say what the power output was; perhaps too low to measure.

Like the second edition of the ARRL Single Sideband Handbook had just been published. A review commented on this.

An advertisement from R. H. Cunningham Pty. Ltd. announced the arrival of the Geloso G222 transmitter and the matching 20BR receiver at about \$800 the pair. Perhaps we shouldn't complain about the price of amateur gear these days.

## QSP

### NBS RADIO STATION WWV

Effective December 1, 1978, WWV resumed its previous transmission on 20 MHz. This transmission has been reinstated because of improved propagation conditions on the 20 MHz frequency and will continue as long as propagation conditions warrant.

## HAMADS

- Eight lines free to all WIA members.
- \$9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTH means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

### FOR SALE

**Yaesu FL2100B Linear**, 10-80m, 400W PEP output, 1 year old, little use, mint, with manual, \$450; Cushcraft 2m ringo with instructions, \$30; Halli-craters FPM-300 SSB/CW Tcvr, 10-80m, 250W DC input, AC-DC, solid state, tube final USA made, with manual, new spare finals, mike deluxe mobile bracket USA made, mint cond., with manual, urgent sale, \$450, ONO; Drake TR4C, SSB Tcvr, RV4C, AC4, MS4, MN4 mike, manual, mint, \$975 firm, John Berry, 40 Grosvenor Street, Woollahra, NSW 2025. Ph. (02) 389 6455 Bus.

**Telefunken Rx E127KW/4** for 1.5 to 30 MHz in 5 bands, plus 6 switched xlt chs., A1-A3, AGC on/off, BFO, S-meter, variable bandwidth 0.1 to 3 kHz, all circuitry and cabinet near original condition, also separate connected dual-path antenna diversity unit (with electronic switching), 17 transistors, 6 diodes, handbooks, only \$120 pair, will separate. VK2KPL Ph. (02) 449 4524.

**Kyokuto Synth 2m Transceiver**, in box with manual, \$325; Katsumi MC22S speech compressor, \$40; SP400 speaker box, \$35; Osler block 200 power meter, \$45. VK2ZHF, QTHR. Ph. (02) 631 1269.

**Comm. Rx Yaesu FRG-7** 0.5 to 30 MHz, continuous coverage Rx, latest model, w/line tuning, as new cond., \$280, ONO. Ph. (03) 91 4041.

**Four 8873 Conduction Cooled Tx Valves** with two Beryllium heat sinks, sockets and screen rings, brand new, never used, \$200 the lot. Doug McArthur VK3UM, QTHR. Ph. (03) 609 1511 Bus.

**Comm. Rx, RS223**, 29 bands, 1 MHz wide, 1.5 to 30.5 MHz, v.g.c., with matching RTTY demodulator, \$270 the pair; Creed TR7 teleprinter with 50 and 45 BWD governors, sound proof wooden cabinet, \$55; metal cabinet, \$60, v.g.c.; white laminex enclosed cabinet on coasters, suits Siemens model 100 teleprinter, \$30, extremely quiet TTY operation; model 15 teleprinter, v.g.c., \$75; and model 14 teleprinter, v.g.c., \$45; RTTY demodulator, value type covers all shifts, v.g.c., \$35. VK3AQB, QTHR. Ph. (03) 337 4902.

**FRG7 High Perf. Triple Conv. Comm. Rx**, all bands 0.5 to 29.9 MHz, continuous coverage, drift free Wadly loop system gives excellent stability, as new, only \$320; Realistic SX190 Comm. Rx, a little beauty on 80-40-20m ham bands and eight SW bands, covered in 500 kHz dial segments, plug in two more xlt for two extra bands of your choice, with ext. speaker and manual, a bargain at only \$120. Wright VK2BZ, QTHR.

**FT75 Transceiver** with AC power supply and DC power supply, with 8 xtls 3.565, 7.008, 7.085, 7.087, 14.150, 14.200, 21.400, 28.550 and VFO, plus mobile cradle, \$355, ONO; PFT203 2m mobile with xtls, channel 40, 50, 1 and 4, \$250, ONO; AC power supply for 2m rig, \$50. Greg Whyler. Ph. (03) 873 3939.

**T5520S**, modified for Novice use, plus DC supply, \$600; FRG-7 Rx, \$200; Home brew 10/15m 4 el. each yagi with KR400 rotator, \$200; home brew tower, 2 sections, 40 ft. total with winch, \$150; HC5000 ATU, \$100. Jeff Boyd VK3NJS. Ph. (03) 391 7519 A.H.

**KLM 140W 2m Class B Linear**, two RCA 5786 valves, suit linear for 2m, three 810 valves, incl. jumbo sockets, three 572B/160L valves, all used but in good cond., three 2C39 valves, 4CX250B single ended 2m amplifier, tube, socket, mechanics and tuned line only, offers on any or all; first reasonable offer or any item will be accepted, Ian Foster VK3ST. Ph. (051) 56 8311.

**Photocopying Machine**, "ArcLight", complete with developer, will take copies up to a full 32 in. width, \$100, plus freight, Ian Foster VK3ST. Ph. (051) 56 8311.

**T5520 Transceiver** (Kenwood), \$550; also MB40A Swan transceiver, solid state, ideal mobile/portable/home station, for 40m, \$275. Ph. (02) 709 7242.

**Communic. Rx AX-190** Amateur band double conversion superhet, covers 80, 40, 20, 15 and all of 10m, complete with matching speakers, \$190. VK2ZIO, QTHR. Ph. (02) 872 1334.

**FT620**, fitted xtls for 50 to 54 MHz operation, with 4 el. yagi, coax, etc., \$350; near complete collection of AR, 1949 to date, \$40. VK5GU. Ph. (08) 223 2296 A.H.

**Halliforters 3X28**, 50 kHz, 54 MHz Rx, incl. full handbooks, \$35. O.A. Radio VK3SM, QTHR. Ph. (03) 386 4048 A.H., (03) 506 5794 Bus.

**Teletype Model 15**, good working order, plus spare paper, \$70; MTR 13 2m rig, 5 ch. conversion, with xtls, \$35; Old Phillips crew, \$10. VK3SU, QTHR. Ph. (059) 44 3552.

**Yaesu FDX 401 Tcvr**, last model with CW filter and AM, as new cond., \$500. VK4IJ, QTHR. Ph. (07) 356 2610.

**Yaesu FRG77 Communic. Rx**, mint cond., \$260. Ph. Bill VK3VDW (059) 75 4087 A.H.

**Yaesu FL2100 Linear Amplifier**, unmarked cond., \$480. VK4AGL, QTHR. Ph. (071) 41 2315.

**Unmodified FT200** with full 10m coverage, 240V AC power supply, and DC-DC power supply for FT200, also full set valves, \$520, ONO the lot. Trevor Bartlett VK5NTB, 143 Murray St., Nurlitoa 5355.

**Icom IC22A 2m FM Transceiver**, repeaters 2 (also repeater), 3, 4, 5, 6, 7, 8, Simplex 37, 40, 50, 53, with original packing and cradle, B12-12 final in very good cond., \$175; KRAOC 2340 23 ch. AM/SSB, suitable for conversion to 10m, \$95. Lew VK1ZLV, Ph. (062) 47 3661 A.H., (062) 49 2885 Bus.

**Antic Mic**, Model 10DA, the dynamic which succeeded the D104, made especially for SSB, complete with stand, new, in original carton (surplus). Roth Jones VK3BG, 23 Gaudin Rd., Doncaster East, Vic. 3109.

**Kenwood Communic. Rx QR-666**, 0.1-130 MHz, incl. amateur bandspread, all solid state, 12V/240V, good cond., \$220. VK8Z/NLD, Ph. Alice Springs 50 2359 (no STD), or write Box 1785.

**Urgent - FT107E** Trans. modified for Novice use, 12 months old, perfect cond., \$530, ONO; Yaesu FR37, perfect cond., very little use, \$240, ONO; HC 500A antenna matcher, 1.6-30 MHz, 8 months old, \$85; Hansen power meter, 100W max., coax switch - 3 outlet, plenty of coax. approx. 50-60m, laminated copper wire for 80m dipole, \$35. Ph. (03) 998 4853 A.H., or (03) 314 0344, Ext. 259, Bus. Ask for Alan VK5NCD.

**Kenwood TS-820S**, incl. DC-DC inverter, service unit, \$950; Hicake TS-33 triband 3 ch. el. yep, 14 ft. boom, 2200, incl. balun; ext. speaker SP-820, suits TS-820S, \$50; Shure 44A 50k imp. mic, \$40; Emotator rotator 103LXB, 150 kg vertical load, \$150. VK5NPF, 8 Macintosh St., Mt. Gambler, Ph. (087) 25 2477.

**Tech Model TE-15 GDO**, as new, \$50.00, RTTY plus boards for ST-6 demod. set of 8, \$26.40, UT-4 eqn. 100, set of 4, \$21.00. Monitor scope, set of 2, \$6.60. AK-1 AFSK mod., auto CW Identi, auto freq. control, each \$3.30, VK3ZY, QTHR, Ph. (03) 277 4748, after 6.00 p.m.

**Kenwood TS-120V**, mobile HF transceiver, with MC-355 noise cancelling microphone, \$500. Phil VK2VIL, Ph. (044) 24772 after 1700h EST.

**10m conversion of Genronics GTX-3325 CB Transceiver**. Covers 25.30-28.50, AM and SSB 25W PEP, full duplex operation on both Tx and Rx, mic. input, had little use, suit noise. \$120 ONO. Jim VK5JL, Ph. (08) 295 8094.

**FRG7 Communications Rx** with narrow SSB filter, mint condition, \$260. EA, Jan. 1976 3.5 MHz Tx with 4 xtal, \$55. John Thurston VK2VFO, Corral, NSW, Ph. (042) 83 3509.

**KW2000E Tavn.**, 150-10m, like new, AC power supply, \$650 ONO. Yaesu YD44 desk mic, \$40. Dick Smith transceiver 10 to 80, like new, \$60. CRO, \$100. ATU, suit 80m, two of \$15 ea. Ph. (052) 75 2421, after 18.30h.

**Yaesu Mobile Antenna**, complete roof-side set, RSL-3, RSL-7, RSL-14, RSL-28, plus RSE-M-2 (element and base), brand new in box. \$100. VK2AYV, Ph. (02) 326 2752.

**Communications Rx Drake SSR-1**, 0.5 to 30 MHz, solid state, battery and 240V AC, built in speaker and antenna, with handbook. \$200 ONO. VK2NVY, Ph. (02) 98 5027.

**FTDX560**, in mint cond., with all features as the FTDX470, \$450. Galaxy SWR/watt meter, 0-400W and D-4000W, \$75. Both together for a cheap price of \$500. VK2RM, QTHR, Ph. (047) 58 6569.

**Complete RTTY station** - Model 19 page printer, \$70; Model 14 tape distributor, \$20; Model 14 typing reperforator, \$20; Motor and load supplies, \$40; EA Terminal, \$50; Lot 170. All in perfect working order. Ham "M" rotator, \$100. VK2BLK, Ph. (057) 64 1236.

**Icom IC211**, as new, complete in original packaging \$500 ONO. Bob Anderson VK2ZXR, Ph. (02) 869 2695 or (02) 218 4848.

**Kyokuto**, in good condition with 10 kHz scanner added, \$300. TR7600, 2 months old, still in original carton, \$365. Willaon 1402SM hand held, in good condition, Rept. 4, 8; Simp. 40, 50, 51 & 146.520, light duty rotor with 100m of cable to suit, unused, \$45. Richard Cowles VK2ANB (VK2NBN, QTHR), Ph. (02) 692 8403.

**FT101**, very good condition, \$560; FV101, new, \$120; IC202E, new, \$160; IC280, near new, \$330; TH6DX with Ham 2 rotator, complete, \$350. Peter VK3BEJ, QTHR, Ph. (050) 24 5814.

**Linear Yaesu FL2100B**, perfect, used only few times. Lee Wilms VK3AB, QTHR, Ph. (03) 20 1754.

**Kenwood TS-520**, 240V AC, 12V DC, power supply, C. Weller, remotes VFO, new, 128V driver, and new pair E146Bs in final amplifier; all in excellent condition. For sale complete to first genuine offer. (Sydney area). Ph. (02) 487 1273.

**Drake SSR1 Comm. Rx**, 5-30 MHz, Wadley loop cct. batt. and AC operated, as new, in excellent cond., handbook and cct., \$230. Ph. (004) 25 3357.

**ACI Marine Tcyr**, 12-14V DC, solid state, broadband, 20W SSB/CW, modified to 80/40m VFO control, 4 xtal positions available, NB, RT, meter, 250 x 100 mm x 300 mm, \$195 ONO. VK3JL, QTHR, Ph. (03) 874 5532.

**Deceased Estate** - Kenwood TR2700G 2m Tcyr, mint cond. w/manual, \$200; Trio 2m external VFO for above, \$100; 13.8V SP w/meter for above, \$30; Yaesu LP filter FF50DX, \$10; Hansen dual SWR meter, \$15; Vibrox key, \$15; MC50 H/L 2 Kenwood desk mic, new, \$40; 28 MHz to 3.5 MHz ATU, \$30; 240V isolation transformer, \$10; 24 hour LED digital clock, \$20. VK2BEK, QTHR, Ph. (02) 476 5096.

**Deceased Estate** - Yaesu mic, 500 ohms PTT with plug; Plantronics boom mic & ear phone M550, 3000 ohms, \$40; B & W coax switch, \$10; Dow Key with 6E15 and instructions, \$8; Ant. noise bridge, Mod. TE7-81, \$20; MD722 mic, \$10; Rota meter, \$5. Plus numerous tubes, coax, etc., please send for list to VK2DA, QTHR, Ph. (02) 94 1039.

#### WANTED

**Large Reflex Horn Loudspeakers** for PA work, also 15 or 20W 500 or 600 ohm drivers in good working order. VK3JL, QTHR, Ph. (058) 65 3213.

**SB-600 Matching Speaker** for Heathkit HW-101 Transceiver, also SB-650 readout in any cond., and any useful information of mods. for HW-101, RT, etc. VK5NCO, Ph. (08) 298 4072.

**Urgently - 2 x 813 Valve Sockets**, good price paid. Errol VK3BET, QTHR, Ph. (02) 476 2933.

**Drake T-4XC Tx** and AC-4 power supply, R. Lyon VK6LK, QTHR, Ph. (09) 457 2202 AH, or (08) 277 2122 ext. 214, bus.

**Remote VFO for Yaesu FT101E**, also extension spkr, Ocker Block and Yaesu aerial tuner, instruction book for FTD400, Ken Cassidy VK4QZ, QTHR, 14 Alice St., Townsville, Qld. 4814.

#### EXCHANGE

**Swap FT101E AC/DC**, near new and in mint cond., for linear amplifier, i.e. Dentron MA2500, Drake L84 or similar, cash adjustment either way if necessary. Ian Foster VK3ST, Ph. (051) 56 8311.

**WSMXY Slow Scan TV Monitor**, complete with circuits and alignment notes, wish to exchange for a solid state, 2m FM mobile transceiver. Steve VK3ZY, QTHR, Ph. (03) 277 4748 after 6 p.m.

#### TRADE HAMADS

**QSL Cards, Log Books, Contest Sheets** - send 20c stamp for samples and prices to Linda Luther VK4VY, PO Box 498, Nambour, Qld. 4550.

**Are you on frequency?** Be on frequency with DSI. Full range of top quality counters up to 1300 MHz, 0.1 parts per million accuracy. Quik-Kit 50 Hz-550 MHz counter kits, 95 per cent assembled, 100 per cent tested, 12 months part warranty, AC or DC operation, 8 digits 1/2 inch LED, accuracy 1 part per million. Special introductory price \$135, incl. postage. Write for further info or check ads in American QST, Ham Radio, etc. Australian distributors ATN Antennas, Box 80, Birchby, Vic. 3483.

## CONTESTS

Wally Watkins VK2NZW/NCU  
Box 1065, Orange 2800

**June:**  
16/17 ALL ASIAN PHONE CONTEST  
23/24 APRIL FIELD DAY

**July:**  
14/15 IARU RADIOSPORT CHAMPIONSHIPS

**August:**  
11/12 REMEMBRANCE DAY CONTEST

## SILENT KEYS

It is with deep regret that we record the passing of -

Mr. W. B. MUDIE VK3XS  
Mr. G. M. FOWLES VK5AG  
Mr. K. W. M. MAGEE (VK3KM) YJ8KW

## OBITUARY

WELL KNOWN OOT BECOMES SILENT KEY

Members of VK/CHC Chapter 66 wish to record their regret at the passing of Cliff Evans, K6BX, founder and creator of IARS (International Air Society), CHC (Certificate Hunters' Club), FHC (Flying Hams' Club), etc., etc.

Cliff died at Bonita, California, on the 30th March, 1979. He was first licensed in 1914 and was an active ham for 65 years. One of his many outstanding accomplishments was the creation of Hamdon's largest ever Awards Programme and its first Directory, produced in book form, called the "D". He was also an outspoken critic of any activity in AR that he saw as unworthy of the service; this brought him into conflict with many people and groups.

The Awards Programme in particular and AR in general will never be quite the same again without him.

VK49S CHC 583

## ADVERTISERS' INDEX

AMATEUR ELECTRONIC IMPORTS	13
AMATEURS' PARADISE	24
AMATEUR RADIO ACTION	14
ATN ANTENNAS	50
BAL ELECTRONICS	24, 32
BRIGHT STAR CRYSTALS	23
CHIRNSIDE ELECTRONICS	30
CUSTOM COMMUNICATIONS	42, 43
DICK SMITH ELECTRONICS	31
EMOKA ELECTRONICS	51
GF'S ELECTRONIC IMPORTS	2
IMARK	7
L. LUTHER	50
NAVITRON	7
SCALAR INDUSTRIES	5
SIDEABAND ELECTRONIC IMPORTS	41
SIDEABAND ELECTRONIC SALES	21, 44
SPECTRUM INTERNATIONAL INCORPORATED	22
GRAHAM STALLARD	21
TOWNSVILLE RADIO CLUB	23
TRIO-KENWOOD	33
VICOM	14, 22, 52
WIA NSW DIVISION	23
WILLIAM WILLIS & CO.	7

Join a new Member  
— NOW —



# YAESU from DICK SMITH

WHEN YOU REALLY CONSIDER THE ALTERNATIVES - THERE ARE NONE!



## COMPUTER TECHNOLOGY COMES TO VHF COMMUNICATIONS

AS REVIEWED IN  
MARCH E.A.



**FABULOUS YAESU FT227R**  
**2m FM**  
**MOBILE**  
**\$335**

### WHAT ARE THE FREQUENCY SPLITS FOR REPEATERS?

Don't worry! Yaesu has computerised it. In addition to a conventional  $\pm 600\text{kHz}$  split, any transmitter offset frequency is memorised with the touch of a button.

### WHAT WAS MY LAST FREQUENCY?

Don't check - a touch of a button will bring you back to the memorised channel instantly.

### WHY ONE KNOB TO SELECT A CHANNEL OUT OF 800?

Yaesu utilises an 'OPTICAL COUPLING' system to select each channel in 10kHz steps and the channel may be offset 5kHz higher with the touch of a button. Thus 800 fully synthesised channels are provided with one knob and no rotary switches to get oxidised or noisy.

### WHAT ARE THE OTHER FEATURES OF THE 227R?

Many. Just to name a few - tone burst accessed repeater operation; automatic final protection; busy channel indicator; high and low power output selection... we could go on & on.

### WHY SETTLE FOR ANYTHING LESS THAN THE 227R?

The fabulous FT-227R. Yours for the low, low Dick Smith price of only \$335.00. Cat. D-2890

**GREAT CIRCLE WORLD MAPS:** Ideal for the shack - based on Australian east coast. Mount under the rotator pointer for true bearings  
Cat B-4502 ..... \$3.00

**CLUBS -** Apply on your club letterhead and we'll send you a copy of the world map FREE! (Limit one per club)  
Cat B-4502 ..... \$3.00

**WORLD CALLSIGN MAP:** Shows prefix on each country plus capitals and major cities, also DX zones. Cat B-2264 ..... \$1.95

**SHINWA TVI FILTER:** We don't have to tell you how good the Shinwa is! 1dB insertion loss, 30MHz cut-off, max. attn from app. 50MHz.  
Cat D-7080 ..... \$19.50

**2m 45W AMPLIFIER KIT:** 8-12W of drive for 35-45W of output. F/glass pcb, instructions inc.  
Cat K-3132 ..... \$27.50

**80m 30W AMPLIFIER KIT:** Ideal for novice! F/glass pcb, 13.8V required. Full instructions.  
Cat K-3133 ..... \$34.95

**AIR-WOUND COILS:** Make your own antenna tuning units and high power liners. Separately boxed coils with full data.  
Cat D-7050 (20mm) ..... \$4.70

Cat D-7052 (40mm) ..... \$5.50  
Cat D-7054 (100mm) ..... \$6.50  
Cat D-7056 (160mm) ..... \$7.90

**OSKER BLOCK:** The SWR & power meter for the amateur operator. Through-line type metering. 2kW rating.  
Cat D-1340 ..... \$67.50

**G6-144 2M COLINEAR:** 117" high for repeater or fixed operation. 1kW rating, low SWR. 6dB gain over 1/2 wave dipole.  
Cat D-4200 ..... \$89.00

**WORLD ATLAS:** A favourite with all DXers contains 20 pages of world maps. 4 colours.  
Cat B-2268 ..... \$3.90

**CO-AX SWITCHES:** Will handle 1kW at 150 MHz. Save \$4.00 while stocks last.  
Cat D-5204 ..... \$22.50 ..... \$17.50

**LOW POWER TYPE:** Handles 150W at 30MHz (although we've used them at 144MHz).  
3 positions. Cat D-5206 ..... \$11.75

**RG58BU CO-AX:** Quality black co-ax at a bargain price - 30 cents per metre for 100 metres or more. 52 ohm, light duty.  
Cat W-2090 ..... 40c/m ..... 30c/m - 100m +

**UR67 CO-AX (RG8U):** Low loss, ideal for feeder systems. Maximum signal transfer.  
Cat W-2095 ..... \$1.35/m ..... \$1.13/m 100m +

**PRE-AMPLIFIERS:** For 27MHz, 52MHz & 144MHz. Mount in aerial circuit, fully tested units. Big savings NOW!  
27MHz (ERB27) Cat D-3827 ..... \$25.90

52MHz (ERB6) Cat D-3806 ..... \$25.90  
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These were selling for up to \$39.00 each!

**BUILD A BEAM:** Our antenna brackets make it easy. Insulating nylon bracket accepts 10mm elements, up to 17mm boom.  
Cat D-4650 ..... \$5c ea

Cadmium plated brackets for larger beams - 17mm elements and 20mm booms.  
Cat D-4652 ..... \$1.00 ea

**VHF TRIMMER CAPACITORS:** Compression type, 1001 uses. 3 capacitance ranges:  
1.5 - 20pF Cat R-2900 ..... 70c

7 - 60pF Cat R-2905 ..... \$1.30  
15 - 115pF Cat R-2910 ..... \$1.75

**VHF CONVERTERS:** For 6 & 2 metres, output on 28-30MHz. 9-12V DC @ 15mA. Supplied complete with circuit. Save \$6.00 on each!  
6 metre (EXC B) Cat D-3836 ..... \$29.50  
2 metre (EXC B) Cat D-3832 ..... \$29.50  
(Both these converters were selling for \$35.50!)

**RAK BL50A BALUN:** T shape, ideal for use as centre support for dipoles or yagis. 1kW rating.  
Cat D-5310 ..... \$21.50

**A-580N ANTENNA:** Deluxe multiband transmitting/receiving antenna. 80 thru 10mx, full 2kW rating. Complete.  
Cat D-4705 ..... \$51 ..... \$39.50

**CG-144 2M ANTENNA:** 5.4dB gain over 1/4 wave mobile, suitable for any ball mount (not included). 200 watts rating. 85" high.  
Cat D-4192 ..... \$49.50 ..... \$29.50

**48TV VERTICAL:** Four band trap resonator covers 40, 20, 15 & 10. Optional 80m resonator. 2kW rating, low SWR. Strong!  
Cat D-4150 ..... \$115.00

**Optional 80 metre resonator for the 48TV vertical:** Cat D-4156 ..... \$29.50

**MOBILE ANTENNA BASE:** Quality base designed for any antenna using the standard 3/8 24TPI thread. Through-roof mount (5/8" hole required) Cat D-4056 ..... \$4.50

**VHF WHIP ANTENNA:** Suitable for 70 to 500 MHz depending on cut. Stainless steel & chrome. Use with above base. Cat D-4015 ..... \$5.00

**BALUN KITS:** Contains a quality ferrite ring with enamelled copper wire and winding details for baluns from 1:1 to 1:9 ratio. Save \$3.50 - was \$12.50! Cat D-5350 ..... \$9.00

## DID YOU GET YOURS?

THE 1978 DICK SMITH SUPER-CATALOGUE WAS IN ELECTRONICS AUSTRALIA LAST MONTH.

If you missed out, copies are still available from your nearest Dick Smith store or dealer for only 75c.

Also available through the mail order department - P.O. Box 747, Crows Nest, NSW, 2065.



# Quality ham gear from VICOM

## ANTENNA COUPLERS

CL670	DAIWA 1.9 - 28 MHz 500w pep	139.00
CNW217	DAIWA incl. SWR/PWR, direct reading, 200w	199.00
CNW417	DAIWA incl. SWR/PWR, direct reading, 500w	245.00
MFJ901	Matches everything 1.5-30 MHz	103.00
MFJ16D10	Random wire tuner 160-10m	75.00
MFJ941	160-10m, 300w, incl. SWR/PWR	133.00

## ANTENNA ROTATORS

DR7600S	Heavy duty with controller & mast clamps	289.00
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CS201	2 position, high pwr, up to 500 MHz	26.00
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## COAXIAL CHANGE OVER RELAYS (DAIWA)

CX-2L	1.8 thru 170 MHz, 100w pep max	46.00
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FD30M	32 MHz Fc, 1 Kw, 3 stages, quality	39.00
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ARX-2	Ringo ranger Gain omni directional	52.00
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## SCALAR

M22T	1/4 wave 2m mobile whip, top only	7.00
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TS180S	Deluxe HF transceiver	530.00
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TS120S	100W HF transceiver	635.00
TS520S	HF transceiver	899.00
TS820S	HF transceiver	185.00
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MS220	Station monitor	60.00
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DB/70cm	twin 8el, 70cm, 12.3 dBd gain, 1.1m	64.00
PBM18/70	18el, 70cm, 14.9 dBd gain, length 2.8m	71.00
MBM48/70	48el, 70cm, 15.7 dBd gain, length 1.83m	83.00
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PMH/2C	Phasing harness	18.00

## PARABOLIC DISHES

PBA-1200	70cm and 1.2GHz, complete	349.00
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## TRAP VERTICALS

V5JR	80-10m trap vertical, 6.7m high	129.00
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TH3JR	10/15/20m 3 el beam	249.00
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## AIRCRAFT MONITORING RECEIVER



- ★ 16 Channels (4 crystals supplied)
- ★ AC/DC Operation
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## synthesised handheld

AR240	800 ch synthesised dial-up, 1.5w output	\$389
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LOOK !



## ICOM IC-402 432 MHz SSB & CW portable

Frequency range 430-435.2 MHz in any 200 KHz bands • Power output 3 watts PEP SSB • CW, USB, LSB • Receiver sensitivity 0.5 UV at 10 dB SINAD. Provisions for external antenna & power sources • BC-20 nicad battery pak & charger optional



## ICOM IC-202S

### 2m SSB portable

The IC-202 features: • Frequency coverage 144-146 MHz • Modulation: ASJ and AT • RF output power: ASJ 3 watts (PEP), AT 1 watt • Sensitivity: 0.5 microvolts at (S+N)/N 10 dB or better • Includes a true IF noise blanker • Requires "C" batteries or external 12 volt source.



## ICOM IC-211 2m transceiver

- 144 to 146 MHz coverage • Modes: SSB, CW, FM • LSI synthesizer PLL
- 4-digit LED readout • Pulse-type noise blanker • VOX w/adjustable gain • SWR bridge • CW monitor
- Automatic power control • AC/DC power supplies • Antenna impedance 50 ohms unbalanced • TX output: 10W PEP



## Tr Dip Meter

\$89

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Brisbane 38 4480  
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